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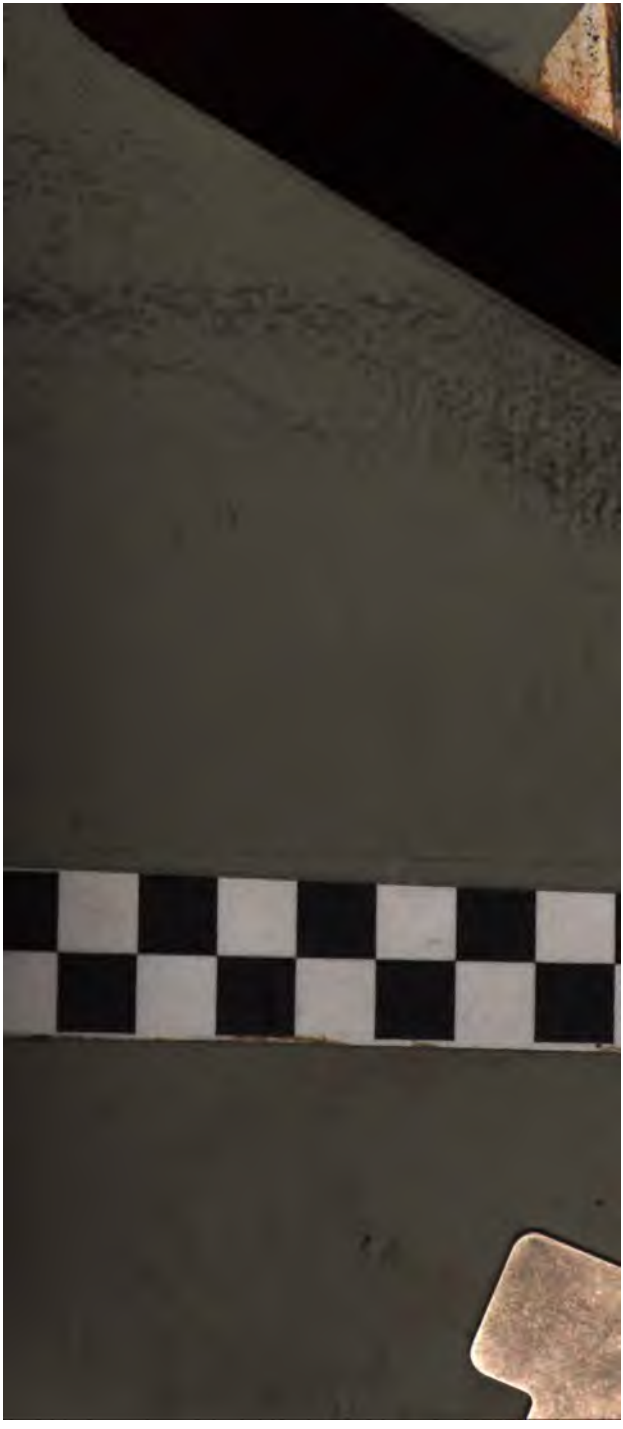

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OF

MODERN GEOGRAPHY

MATHEMATICAL, PHYSICAL, AND POLITICAL

ON A NEW PLAN

EMBRACING A COMPLETE DEVELOPMENT OF THE RIVER SYSTEMS OF THE GLOBE

BY THE

REV. ALEX. MACKAY, LL.D. F.R.G.S.

AUTHOR OF

'FACTS AND DATES;' 'ELEMENTS OF MODERN GEOGRAPHY;' 'OUTLINES OF MODERN GEOGRAPHY;' 'FIRST STEPS IN GEOGRAPHY,' ETC.

SIXTH THOUSAND, REVISED TO DATE OF PUBLICATION

WILLIAM BLACKWOOD AND SONS

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PREFACE TO SECOND EDITION.

THIS edition of the Manual of Modern Geography has been thoroughly revised throughout, and in numerous sections entirely rewritten. The Manual was the Author's literary firstborn, and on it were fondly lavished all the privileges and affections inseparable from primogeniture. Many long years were cheerfully devoted to its first production, when the Author had to labour single-handed, in a remote corner of the land, with few books and still fewer friends to consult. He had his reward, however, in the emphatic verdict of the public press, and the unqualified approbation of eminent educationists from all parts of the British Empire.

As the First Edition, however, consisted of a very large impression, wellnigh a decade of years has elapsed since its preparation, and in that decade numerous changes have taken place in all departments of Geography, as also in all the sciences with which it stands most closely connected. In order, therefore, to place the work a second time wholly abreast of the progress of events, no less than an entire year of uninterrupted labour has been devoted to this Edition.

A large portion of the Political Geography had to be

recast, especially the sections relating to the British Isles, North Germany, France, Italy, Russia, India, the United States, and the British Colonies; while those bearing on Astronomy, Geology, Meteorology, Commerce, Manufactures, and Inland Communication, had to be rewritten.

In this Edition, a brief Historical Sketch has been added to the Political Geography of all European countries, as also several new Diagrams illustrative of the Seasons, the Tides, and the Succession of Life in the pre-Adamite ages of our Planet's history. It is hoped that the work will be found increasingly useful to Teachers, Advanced Classes, Candidates for the Civil Service (Home and Foreign), and especially as a work of reference.

EDINBURGH, 15*th May* 1870.

*** Every page has been carefully revised anew, and the information brought down to December 1872. The results of the census of the United Kingdom for 1871, and indeed of all parts of the British Empire, are incorporated, and the newly-constituted German Empire fully exhibited. A. M.

EDINBURGH, 1*st December* 1872.

In preparing the present edition for press, the entire work has been subjected to another thorough revision. All political changes are carefully represented; the social, industrial, and commercial statistics of all countries are brought down to the latest dates; and the rapid progress of geographical discovery is duly notified. In short, no pains has been spared to render the work wholly reliable in every department. A. M.

HATTON PLACE, EDINBURGH,
15*th March* 1876.

PREFACE TO FIRST EDITION.

CONSIDERING the improved methods now generally adopted in teaching Geography, the ever-expanding dimensions of our own gigantic empire, the numerous additions recently made to our knowledge of foreign countries, and, as a consequence of these, the increasing interest felt by educated persons in every department of the science, the Author deems it superfluous to offer any apology for issuing the present Manual. As it differs, however, somewhat widely, both in matter and arrangement, from all its predecessors, it may be necessary here to describe its more prominent characteristics.

The work commences with a brief account of the relation of the Earth to the Solar system, and of the latter to the other worlds which people space.

The form and materials of the globe, the configuration of its surface, its climate, mineralogy, geology, botany, zoology, and ethnography, are next discussed; and thus a foundation is laid for the subsequent details in Physical and Political Geography.

The individual continents and minor divisions of the earth's surface then pass successively under review. Each of these is viewed from many sides, and the results presented to the learner in a corresponding series of brief but pointed sections.

The precise *order* in which the different sections should stand was a subject of much careful reflection. While in most other works on geography the physical and political stand widely apart, they are here intentionally combined, and so made, not only to reflect mutual light on each other, but also to correspond more closely with the manner in which the realities to which they refer interpenetrate one another in nature.

Without adverting to the contents of each of the sections individually, the Author can here only notice those of them in which he has departed most widely from the usual routine. The first departure occurs under the heading POSITION AND BOUNDARIES. It is singular what confused notions prevail, even among otherwise accurate geographers, regarding the relative position of the best-known places. For example, how few ordinary students of geography could say, without consulting globe or map, what other important places have the same latitude and longitude as London, Edinburgh, or Madrid! To remedy this, a single sentence is uniformly added to this paragraph, mentioning all the most important places on the globe lying on the same parallel and meridian with the capital of the country under review, or with the central point of the latter, should the capital happen to be situated at some distance from its centre. In addition to the greater familiarity with the relative position of places which is

thus communicated, these brief notices, it is hoped, will be found serviceable to the student when comparing the climates, botany, and zoology of different countries.

Under the AREA of each country, in addition to the information usually given, its magnitude is invariably compared with that of the British Isles collectively, or with one or other of the kingdoms composing them; and a similar comparison is drawn regarding its POPULATION, which in every instance embodies the results of the most recent census or estimate.

The articles entitled "POLITICAL DIVISIONS" have been thoroughly elaborated, in accordance with the best maps, and a new principle of arrangement adopted. Instead of adhering to the prevailing custom of giving under each province or county a dry list of cities and towns wholly unconnected by any system of arrangement, the writer had no hesitation in availing himself of a principle equally simple and beautiful with which nature supplied him. He refers to that great axiom in geography, that *all the cities and towns on the earth's surface, whether ancient or modern, stand on the banks of rivers, or on the sea-coast.* This principle is universally valid, notwithstanding a few apparent instances to the contrary.

Till very recently, when the canal and the railroad have to some extent supplied their place, rivers have in all ages formed the great highways of commerce. In every land the banks of rivers present the most fertile portions of the country, as the valleys of the Tigris, the Euphrates, the Nile, and the Jordan; and have formed the earliest seats of civilisation—as, for example, Nineveh, Babylon, Heliopolis, Damascus — the origin of which dates back to the dawn of history. So close, in short, is the connection between the rivers of a country and its towns, that there is no exaggeration in saying that the rivers have *created* the towns; or that, without the rivers, the towns would have had no existence. In no system of geography founded on natural principles can this connection be overlooked. The political boundaries of a country will vary from time to time with the varying fortunes of its rulers, but its rivers will continue to flow in their wonted channels, and the cities that grace their banks will continue to pay them their wonted homage. Rivers are majestic trees that have their roots fixed in the ocean, and their tops reaching the clouds; the great cities of the world hang around their stems; while the towns and villages cluster like fruit on their branches.

Hence, though the Manual embraces some other original features, it was the intimate connection subsisting between rivers and towns that led to its production, and that forms the principal basis on which it rests. While the influence of this

connection can be traced in almost every page, three of the twenty-four sections usually devoted to each country are entirely occupied with its elucidation—viz., those entitled "Principal River-Basins," "Political Divisions," and "Table of Rivers and Towns." The first of these shows the dimensions of all the larger river-basins, and indicates at a glance how many provinces or counties they embrace either wholly or in part. In the second it necessarily occupies a somewhat subordinate place; for not only must the towns with their population be placed in the foreground—the name of the river being placed after them within parentheses—but the boundaries of the provinces continually interrupt the continuity of the rivers. The capital of a province is, moreover, placed first, even though it should not stand nearest to the river's mouth; and, finally, only the larger towns in each province have the rivers on which they stand indicated lest the learner should be overburdened with their multiplicity. All the towns, however, whose population ranges between 5000. and 10,000 are immediately subjoined, but in a smaller type, to indicate that they may be omitted in a first perusal. The only departure from this is in the case of the United Kingdom, in treating of which it was considered necessary to embrace towns of a much smaller population.

But the third of these paragraphs, or those denominated "Tables of Rivers and Towns," are those to which the Author would direct most special attention, as presenting at once the most original portion of his Manual, and the fullest exhibition of his peculiar method. An immense amount of time and labour has been expended on these tables; but, judging from experience, the Author is convinced that their importance to the student, and the labour and time they will save to the teacher, fully justified the sacrifice; for he is aware that many of the most successful teachers of geography are in the daily habit of drilling their classes more or less in accordance with the method here so fully developed, but having no reliable guide to direct them, each of them is obliged to draw out a scheme for himself, from such materials as he may have at command.

Having said so much on the "River System," properly so called, space will not allow an equally minute description of the other paragraphs. Suffice it to say, that similar care and patience have been bestowed on all of them. THE MOUNTAIN-RANGES and the LAKES are more systematically arranged, and their connection with the river-basins more closely exhibited, than in any other existing Geography.

The sections describing the CLIMATE, GEOLOGY, MINERALS, BOTANY, and ZOOLOGY of the different countries, have been drawn up with the greatest care, and from the most recent and

accurate authorities; while those that discuss their ETHNOGRAPHY are the result of much earnest research. Under the last-named head have been sketched, not only the race, religion, national character, form of government, and education of the different nations, but their language and literature have also received the attention to which they are entitled. The former of these is briefly described, and its *relation to other languages* carefully stated; while the latter embraces elaborate lists of all the more *Eminent Names* that adorn the literature of their country. The ethnographical sections are followed by brief descriptions of the Army and Navy, Public Debt, Revenue and Expenditure, Commerce, Manufactures, Exports and Imports, Inland Communication, and Foreign Possessions (if any) of the various states, in the preparation of which the most recent statistics have been consulted.

The DESCRIPTIVE NOTES, which are appended to the Political Divisions, are considerably more numerous than is customary in geographical manuals, especially the notes on the counties and towns of the British Isles, and all other parts of the British Empire.

The PRONUNCIATION of geographical names is invariably a matter of deep interest, alike to teachers and pupils. Instead of following the prevalent custom of giving the pronunciation of difficult words, all arranged in one general catalogue, the Author considered it much more conducive to the student's improvement to insert, under each individual country, short but explicit Rules founded on the peculiar genius of its own language, and followed by appropriate examples, as pronounced by the natives.

The Author cannot conclude these observations without expressing his deep obligations to those valued friends who so generously assisted him in his self-imposed task. His best thanks are due to the Rev. M. Mackay, Fordyce, for his aid in connection with the topographical sections, the minuteness and accuracy of which are in a great measure the result of his unwearied labours: and to A. Keith Johnston, Esq., LL.D., Her Majesty's Geographer for Scotland, for the many valuable items of recent information with which he favoured the Author during the composition of his Manual, and for his great kindness in volunteering the final revision of the proof-sheets. Above all, I have the most unfeigned pleasure in expressing my deepest obligations to another (who for the present must be nameless), without whose constant companionship and unwearied assistance this Manual could never have attained that degree of minute accuracy which, I believe, every page will be found to exhibit.

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MANUAL OF GEOGRAPHY.

GEOGRAPHY is that science which has for its object the description of the surface of the Earth, or of that member of the Solar System which forms the abode of Man.

Though in regard to practical importance it occupies the foremost place among the physical sciences, it has been the last to receive the attention which is due to it. It consists of two principal branches—viz., Ancient Geography, which embraces the lengthened period intervening between the earliest dawn of history and the fall of the Roman Empire; and Modern Geography, which extends from that event to the present time. The latter is subdivided into four departments—viz., Mathematical, Physical, Political, and Historical.

Mathematical Geography treats of the Earth in its relations to other celestial bodies; of its motions, form, and magnitude; and of the true position of places on its surface.

Physical Geography treats of the configuration of the Earth's crust; the materials of which it is composed; the soil and climate that prevail at different parts of the surface; and the effect of the latter on its living inhabitants—plants, animals, and man.

Political Geography—the only branch of the science which received adequate attention in the schools of this country till of late years—treats of the artificial or political divisions of the surface into empires and states; their extent, population, and material resources; their government, people, religion, language, and civilisation.

Historical Geography endeavours to establish when and by whom the different countries were first peopled; the political changes which they have subsequently undergone; and especially the progress of geographical discovery in modern times.

The first and second of these branches require separate consideration; the third and fourth will be treated of in connection with the individual countries.

PART I.

MATHEMATICAL GEOGRAPHY.

1. Position of the Earth and its Relation to other Worlds.—The earth on which we live is not to be regarded as an isolated, independent body, having no relations to other worlds; but as one of the members of a large family of similar bodies collectively called the Solar System, all the parts of which are united in one beautiful and harmonious whole by the mysterious power of gravitation.

The Solar System.—This system is so named from the fact that the sun (Lat. *sol*) is by far the largest body belonging to it—that he is placed in the centre, all the other members of the system revolving around him, either directly or indirectly—and especially to distinguish it from the numberless other systems that are located around it in universal space, each of which has probably its own sun or star as the immediate centre of its light, heat, and gravitating power. So far as presently known, the solar system consists of 174 distinct bodies—viz., the sun; 9 large planets revolving around him in nearly circular orbits; 147 planetoids, or smaller planets, between the orbits of Mars and Jupiter, supposed by some to be the fragments of a large disrupted planet; 18 satellites or moons, one of which belongs to the earth, and all the others to the four most distant planets; besides a host of comets, which move in extremely elliptical orbits, and myriads of meteorites. Only a very few of this large number were known to the ancients—viz., the Sun, Earth, Moon, Mercury, Venus, Mars, Jupiter, Saturn, and a few of the more remarkable comets. All the remainder have been discovered since the invention of the telescope by Galileo in the beginning of the seventeenth century. The centre of this wonderful piece of mechanism is occupied by the sun, a huge mass of opaque matter, 1,245,000 times the size of the earth, but surrounded by a luminous atmosphere. Though stationary in relation to the other members of the system, he is in reality advancing through space—carrying in his train his numerous retinue of planets, satellites, comets—with a velocity of 17,580 miles per hour. This velocity, however inconceivable, is exceeded nearly fourfold by that of the earth in her annual circuit round the sun. The planets move around the sun in elliptical, but nearly circular, orbits, and in the same general direction, though at various distances, velocities, and periods of revolution, as shown in the following tables (p. 6, 7). The satellites perform similar ellipti-

cal orbits round their primaries; while the paths of the comets are highly eccentric, consisting for the most part of extremely elongated ellipses.

Cause of Elliptical Motion.—This elliptical motion is the result of the composition of two forces acting on the planet simultaneously, but in different directions. The first of these is called the *centrifugal* or *tangential force*, and is that which the planet received from the hand of the Creator when originally launched into space. This force, if unrestrained by any opposing one, would carry the planet wholly away from the sun, and project it into the depths of infinite space. But it is opposed or counteracted by the *centripetal force*, a force always acting at right angles to it, and directed towards the sun, or rather towards the centre of gravity of the entire system—a point situated within that body, though at a great distance from its centre. The latter force, again, if acting alone, would cause the planet to move towards the sun in a straight line, and with continually accelerated speed. But as both forces are incessantly operating, the planet must, in giving obedience to each of them, describe a curvilinear path. The curve so described will, in every case, be one of the *conic sections*—that is to say, it will be one or other of the various curves obtained by cutting a cone in all the possible directions. It will depend, however, on the particular circumstances of the case—viz., direction, distance, and velocity—which of the curves shall be described—*i.e.*, whether a circle, an ellipse, a parabola, or an hyperbola. Thus, the orbit will be a *circle*, when the square of the tangential velocity is equal to the diameter of the circle multiplied by the centripetal velocity; it will be an *ellipse* when the former product is greater than the latter; a *parabola*, when the former product is exactly twice as great as the latter; an *hyperbola*, when more than twice as great; and, in every case, the angular velocity of the *radius-vector* must be inversely proportional to the square of the mutual distance of the two bodies.

The "Cause of Elliptical Motion," as above described, cannot be easily comprehended without some inquiry into the cause of *all* motion, or, in other words, without an inquiry into the relation subsisting between the Creator and the material universe. That relation, though no doubt profoundly mysterious, is not one regarding which we are left wholly in the dark; for what human philosophy, left to its own unaided resources, might never succeed in *discovering*, the Creator has been pleased to *reveal*. Since the announcement of the law of universal gravitation, physical science has made unparalleled progress in all directions, yet to this day the most incoherent theories regarding the cause of motion, and the ultimate source of the mighty energies everywhere observable in the material world, have been propounded. Many philosophers appear to regard the attractive power of gravitation as a mere property of matter. It is either, they maintain, a property essential to the *very existence* of matter, or which, though not originally belonging to matter, has been communicated to it by the Creator, and which is now so indelibly stamped thereon that it may be said to be inherent in it, so as to form part and parcel of its being. And not only, it is argued, does this hold good of gravitation itself (as existing between the orbs of space), but also of all

its varieties and modifications, as magnetic attraction, chemical affinity, electric attraction, cohesion, and adhesion—all are mere properties of matter, a conclusion beyond which it would be in vain to push our researches. Now, if this result is to be accepted, all the so-called laws of nature are merely the necessary and inevitable consequences of these unchanging and unchangeable properties of matter. According to this view it follows, that the physical universe, though abandoned by its Maker—whose sustaining hand, indeed, is no longer required—will not only continue in existence, but will for ever carry on, without interruption or diminution, its present multiform activities. In our opinion, no view could possibly be more perverse, however eminent in science some of its propounders. It wholly fails in satisfying the cravings of every earnest inquirer who searches for truth as for hidden treasure. We cannot suppose it possible that the Creator should abandon the universe to the play of its own activities. He cannot take up the position of a mere spectator, and contemplate from a distance the mighty machine He has set in motion. To do this would be to insure its instant destruction. For He not only created the worlds by His fiat, but "in Him all things consist," and He "upholdeth all things by the word of His power." According to these divine utterances, the forces that are at work in nature are not inherent in matter, but in that Almighty Being who not only summoned matter into existence, but who continues to sustain it in being and in the possession of all its properties. In short, we arrive at the grand and fundamental principle, *that material objects can never become the ultimate fountains of any species of power, and that mind is the true source of all power and of all motion.*

It will greatly aid us in forming a right conception of the relation subsisting between the Divine Mind and the universe, if we carefully consider the relation that subsists between the human mind and body. This relation is easily discovered, and is profoundly instructive. It differs greatly from the relation in which the mind stands to objects *external* to the body. Over these the mind has no immediate control: they cannot hear any voice nor obey any command. Even the members of our own bodies give no obedience to commands audibly expressed, unless such commands are accompanied by acts of *volition;* but no sooner does the mind *will* that the hand or the foot shall perform any motion, than it is responded to by an act of instant obedience. So brief, indeed, is the interval between the mental volition and the resulting motion, that human science cannot measure it. The will, however, has no such control over objects foreign to the body—acts of volition have no effect upon these. The direct power of the mind is limited, in every case, to the organised body which it animates. Now, there must be a close analogy between this relation of the mind and body of man and the relation subsisting between the Divine Mind and the physical universe, for "God created man in His own image, after His likeness." This inspired utterance, like a pure and perfect crystal, has many sides; and the side nearest our present point of view undoubtedly teaches, that the Almighty exercises over the material universe a control closely analogous to that which the human mind exercises over its own corporeal organism. Analogy, however, is not identity, and the material universe is not an organised body which the Divine Mind animates. He is not "the soul of the universe," and still less is He that impersonal abstraction about which the Pantheist dreams, but a gracious and loving Father, who ever feels the deepest interest in the wellbeing of His children. Analogy is not identity, but even analogy is of importance where the aids are so few, and where the lights burn so dimly. And that there *is* an analogy

is beyond all doubt; for, on the one hand, the mind of man exercises a supreme control over the members of his own body; while on the other, the Divine Being has ever continued from the morning of creation to maintain, by the silent forthputtings of His will, the most absolute control over all His creatures. Sun and moon and stars, the winds and waves and raging storms—all are His servants, and all are obedient to His will. The laws of nature—generally regarded as so mysterious, and to which some would assign a position due to the Lawgiver alone—find here their true explanation: they are simply a convenient name for the incessant volitions of an unchangeable God. He can suspend these laws at pleasure, and He has, in fact, suspended them once and again. But from the point of view from which we are contemplating the Creator and His works, there is no more of mystery in the so-called miracle than in the regular course of nature.

Progress of Discovery.—The true system of the universe was not understood till near the middle of the sixteenth century, when the illustrious Copernicus (born at Thorn, in Prussia, 1473) began the solution of the vast problem, by showing that the sun is the centre of our system; that the planets move around him in *circular* orbits; and that the daily motion of the heavenly bodies is only apparent, and caused by the rotation of the earth on its axis. Several phenomena, however, remained inexplicable under this theory, such as the change of planetary velocity in different parts of their orbits, and the consequent alteration of their apparent magnitudes,—appearances inconsistent with the assumption of their moving in perfectly circular orbits. A century after Copernicus, the immortal Kepler appeared (born at Weil, in Würtemberg, in 1571), and devoted his life to the explication of these difficulties. The result was the three famous "laws" which will ever retain his name, and which may be ranked among the most brilliant discoveries ever made in science. They are as follow:—

1. The orbits of the planets are *ellipses*, which have all a common focus, and in this focus the sun is situated.
2. If a line be drawn connecting any planet with the centre of the sun, that line—called the *radius-vector*—will describe equal areas in equal times, in whatever part of the orbit the planet may be moving.
3. The squares of the times of revolution of any two planets are to each other in the same proportion as the cubes of their mean distances from the sun.

Finally, the world-renowned Newton (born at Woolsthorpe in Lincolnshire, in 1643) placed the keystone in the mighty arch erected by his predecessors, by discovering the law of universal gravitation, and thus completing the theoretic view of the planetary system. The satellites of Jupiter were discovered by Galileo in the beginning of the seventeenth century; those of Saturn, by Huyghens and Cassini, in the latter half of that century; Uranus, by Herschel, in 1781; Neptune, by Adams and Leverrier simultaneously, in 1846; Vulcan, by Lescarbault, a French physician, in 1859; and all the planetoids during the present century. Every year, indeed, is adding new members to the system, as instruments are improved and the number of observers multiplied.

Astronomical Tables.—The following tables,—originally constructed by Professor C. Piazzi Smyth, Astronomer-Royal for Scotland, and subsequently revised by him and brought down to the present state of astronomical science,—give in detail all the most important of the numerous interesting facts hitherto ascertained regarding the different members of the solar system. On comparing these tables with those published in the first edition of this work, it will be seen that astronomers have not been idle during the last ten years—that numerous corrections and rectifications have been made in almost every column; and that, in particular, the great physical problem of the age—the true mean distance of the sun from the earth—has made rapid progress towards a satisfactory solution. This problem is fully discussed in the author's recently-published work, 'Facts and Dates' (Edinburgh, Blackwood & Sons), and need not be repeated here. That distance, it may now be confidently assumed, is 92,093,000 miles; for that is at once the grand mean of all recent researches, as also the number clearly indicated by that marvel of architecture, the Great Pyramid of Jeezeh, now shown to have been erected B.C. 2170. In accordance with the third law of Kepler, the earth's distance from the sun determines the distances of all the other planets, the proper numbers for which have been drawn up by the indefatigable W. Petrie, civil engineer, whose labours have had no small share in solving the great problem referred to:—

THE SOLAR SYSTEM.

Names and Order of the Planets.	Mean Distance from the Sun in Miles.*	Periodic Time of Revolution in mean Solar Days.	Velocity in orbit per hour in Miles.	Time of Rotation on Axis in Solar Days.	Amount of Light—Earth = 1.	Number of Moons.
				Days, ho. m.		
Sun			17,583	25 7 48		
Vulcan	13,082,000	19.70	174,000			
Mercury	35,649,000	87.97	105,330	1 0 5	6.656	0
Venus	66,614,000	224.70	77,050	28 21	1.932	0
Earth	92,093,000	365.25	65,533	1 0 0	1.000	1
Mars	140,322,000	686.98	53,090	1 0 37	.436	0
Minor planets	259,000,000	1,684.74	39,882		.130	0
Jupiter	479,141,098	4,332.62	28,744	9 55	.036	4
Saturn	878,461,000	10,759.30	21,221	10 29	.011	8
Uranus	1,766,565,000	30,686.82	14,963	9 30	.003	4
Neptune	2,766,133,000	60,126.71	11,958		.001	1

* Professor Bode, of Berlin, in 1778 pointed out the following remarkable empirical law, relative to the distances of the planets from the sun and from each other: "The distance between the orbits of any two planets is nearly twice as great as that between the orbits of the next two nearer the sun." Thus suppose the distance of Mercury from the Sun to be represented by 4; then, Venus will be 4+3, or 7 such distances; the Earth 4+twice 3, or 10 such distances, &c.

	Polar Diameter in Miles.	Equatorial Diameter in Miles.	Volume or size—Earth = 1.	Mass or Weight—Earth = 1.	Density or Specific Gravity—Earth = 1.	Force of Gravity at Surface—Earth = 1.	Inclination of Plane's Equator to Plane of Orbit.
							° ′ ″
Sun	852,380	852,584	1,245,130.000	314,760.00	.25	27.20	
Vulcan	785?	785?					
Mercury	2,962	2,962	.052	.07	1.24	1.15	
Venus	7,510	7,510	.851	.79	.92	.91	49 58 0
Earth	7,899	7,925	1.000	1.00	1.00	1.00	23 27 24
Mars	4,036	4,920	.139	.12	.96	.50	28 51 0
Minor planets	670*	670					
Jupiter	83,151	88,400	1,387.431	300.36	.22	2.45	3 4 0
Saturn	64,714	71,904	746.898	90.08	.12	1.09	26 49 0
Uranus	29,722	33,024	72.359	12.64	.18	1.05	76 0 0
Neptune	36,620	36,620?	98.664	16.76	.17	1.20	26 0 0
Moon	2,158		.024	.013	.63	.17	

2. Relation of the Solar System to the Universe.—The Solar System, or the sun with his accompanying train of planets, satellites, and comets, constitutes but a small portion of the material universe. When we survey the heavens at night, we behold a multitude of luminous objects called stars; and, by the assistance of a good telescope, myriads more become visible. Their apparent magnitudes are very different, and this difference has been made the basis of classification in forming some estimate of their number. Those visible to the naked eye are divided into six classes: the brightest stars are said to be of the first magnitude; those of an inferior degree of brightness, of the second magnitude; and so on, down to the sixth, which comprises the smallest stars visible to the naked eye in the clearest moonless night. The telescope vastly extends the power of vision, and astronomers are familiar with stars of the sixteenth degree of magnitude; and there is no reason to suppose that this is the limit to the progression, as every increase in the dimensions and power of the instrument brings into view myriads of stars that were invisible before.

Number of the Stars.—The total number of stars visible to the naked eye in the most favoured localities is about 5000. It is only at the equator, however, that so large a number can be seen; for there only the spectator has the opportunity of seeing the whole heavens, without altering his position. Should he take up his position at either of the poles, no more than half the starry firmament can ever pass in review before him; while at all intermediate positions, the number of stars visible in any one night will depend on the latitude of the place. Argelander of Bonn has classified the

* Pallas the largest of them.

number of stars visible to the naked eye as follows: Stars of the first magnitude, 20; second magnitude, 65; third magnitude, 190; fourth magnitude, 425; fifth magnitude, 1100; sixth magnitude, 3200. Total number visible at equator, 5000. It thus appears that each inferior class is about three times as numerous as the one preceding it. The whole number of stars already registered, down to the *seventh* magnitude, is about 18,000; and some astronomers have estimated the total number of stars visible by means of the best telescopes, down to the sixteenth degree of magnitude, at 500,000,000,000! On the other hand, such is the extreme *tenuity* of matter that 5,000,000,000 molecules placed side by side do not occupy more than one lineal inch, while the number of molecules in a solid inch is the cube of that number! *

Distance of the Stars.—The distance of the fixed stars from our sun is as inconceivable as their number; but, until recently, there were no data from which any probable calculation could be made. In the year 1838, however, the parallax (or angle subtended by the diameter of the earth's orbit, as seen from a star) was measured in the case of three of them. The parallax of *α Centauri* was ascertained by Professor Henderson of Edinburgh to be 0".9128, or nearly *one second;* that of 61 *Cygni*, by Professor Bessel of Königsberg, who found it to be 0".3483; and that of *α Lyræ*, by Otto Struve, who found it to be about 0".25, or a quarter of a second. The major diameter of the earth's orbit being about 185,000,000 of miles, a parallax of *one second* will give a distance of 20,000,000,000,000 (twenty billions) of miles, which is probably the distance from our sun of the nearest fixed star;—a distance so great that light, which travels at the rate of 185,000 miles per second, would require 3½ years to traverse it. The distance of the star 61 *Cygni*, its parallax being only ½ of a second, will be *three times* this number; and of *α Lyræ*, whose parallax is ¼ of a second, will be *four times* twenty billions! The distance of twelve fixed stars is now approximately determined.

Magnitude of the Stars.—In the present state of astronomical science, the magnitude of even the nearest of the fixed stars cannot be given with any degree of accuracy. It is certain, however, that, in general, they are greatly larger than our sun; for were the sun to be removed from his present position, where he has an apparent diameter of 32′ 3", and made to occupy the place of *α Centauri*, which is regarded as the nearest of the fixed stars, his diameter would be reduced to 0".0093, or less than the hundredth part of a second. Here he would fail to be seen by the naked eye, and no telescope ever invented could give us any idea of his size. If, on the other hand, *α Centauri* were removed from his actual position, and made to occupy the place of our sun, it is calculated that the light which he emits would be 2½ times greater than that of the sun; and hence, it is argued, his *magnitude* must be correspondingly greater. The intrinsic splendour of Sirius is 63 times greater than that of *α Centauri*, and 192 times greater than that of the sun; and hence it is supposed the magnitude of Sirius is 2688 times greater than that of our luminary. Considerable uncertainty, however,

* 'The New Chemistry,' by J. P. Cooke, 1874, p. 34.

attaches to this mode of estimating the magnitude of those distant bodies. The light of the sun is so immensely superior in intensity to that of any star that it is impracticable to obtain any direct comparison between them, and it is only by using the moon as an intermediate term of comparison that any approximation to accuracy can be made. Wollaston, in 1829, found the proportion of the sun's light to that of the full moon to be as 801,072 to 1; while the light of the full moon exceeds that of *α Centauri* in the proportion of 27,408 to 1. Combining these results, he calculated the light of the sun as exceeding that of the star 21,955,000,000 times. Hence, from the parallax above assigned to the star, it is easy to conclude that its intrinsic splendour is 2.3247 times that of the sun.

Proper Motion of the Sun and Stars. — The so-called "fixed stars" are, in reality, all in motion: and no fixed point—no object absolutely at rest—is to be met with in the whole universe. The power of gravitation, which binds together the numerous members of the solar system, appears to be equally operative among the most distant objects in space. The relative distances of the fixed stars, and even the configuration of the constellations, are imperceptibly altering. Of all the bright stars observed by the ancients, not one has kept its place unchanged. In the case of Arcturus, for example, of *μ Cassiopeiæ*, and of a double star in *Cygnus*, this change of position has, in 2000 years, amounted to 2½, 3½, and 6 moon's diameters, respectively. While some vary only the twentieth part of a second annually, others vary 7.7 seconds,—showing a ratio in their proper motions of 1:154. The Southern Cross will not always shine in the heavens in its present form, for the four stars of which it consists are moving in different directions. Even our own sun, so long regarded as stationary in the centre of the system, is found to be in rapid motion through space, and daily traversing a distance of 432,000 miles,—a space exceeding his own radius. Sir W. Herschel arrived at the conclusion, three quarters of a century ago, that he was moving in the direction of λ *Herculis*,—a point in right ascension 260° 34′, and north polar distance 63° 43′, for the year 1790. Otto Struve, from a very elaborate discussion of the proper motion of 392 stars, determined the point, for 1850, to be in right ascension 261° 52′; declination 37° 33′. It will probably, however, be a long time yet before astronomers are in a position to determine whether this motion of our system through space is in a right line or curvilinear; and, if the latter, what that point is around which it is revolving. Dr Mädler of Dorpat has, indeed, hazarded the conjecture that our sun is only one of the millions of stars of the well-known Milky-Way, which consists of a mighty ring, or wheel of stars, greatly crowded together at the circumference, but comparatively few towards the centre. The central group of this grand system, which composes our firmament, is, he thinks, the Pleiades, which revolves round *Alcyone*, the brightest orb of that beautiful constellation. The distance of our sun from that centre of force he calculates at 31,500,000 times the distance of the earth from the sun,—a distance so great that light could not traverse it in less than 500 years, and requiring 18,200,000 years for our sun to complete one

revolution! But however lofty such conceptions of genius may be, they are not, as yet, to be regarded as established scientific truths.

3. FORM, SIZE, AND MOTIONS OF THE EARTH.—Having thus traced the relation of the earth to surrounding worlds, we now return to examine itself more minutely. Its *form* is that which a perfect sphere* of fluid consistency would assume, were it made to revolve around its axis with the same rapidity as the earth does. Such a form is called an *oblate-spheroid*,†—that is, a sphere somewhat flattened or compressed at the poles, like an orange. The larger or equatorial diameter exceeds the polar diameter by 26 miles—the former being 7925, and the latter 7899 miles. In round numbers, the diameter may be stated at 8000 miles; the radius, or semi-diameter, at 4000; the circumference at 25,000; the area, or superficial content, at 197,310,000 sq. m.; the volume, or solid content, at 260,613,000,000 cubic miles; and the weight at 6050 trillions of tons.‡

Motions of the Earth.—The earth has three motions: first, that referred to above, in accompanying the sun through space (*see* p. 2); second, an *annual* or *orbitual* motion round the sun, which it per-

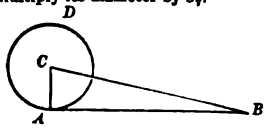
* Among the numerous proofs of the spherical form of the earth, the following may be mentioned:—

1. A much greater extent of the earth's surface is visible from the top of a mountain than from a plain near the level of the sea.
2. As the mariner nears the land, he first sees the tops of the mountains; and on approaching nearer, the lower grounds become visible.
3. In cutting for a canal, it is found that allowance must be made for a dip of about 8 inches per mile, in order to keep the water at a uniform level.
4. In travelling to any considerable distance, either north or south, new stars come to view in the direction in which the traveller is advancing, while others disappear in the direction from which he is receding.
5. Many navigators, who have sailed constantly in one direction, whether due east or due west, have returned to the port from which they set out.
6. The shadow which the earth casts on the moon, during an eclipse, is always circular.
7. All the other members of the solar system are spherical.

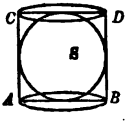
† A *prolate* spheroid, on the contrary, is a sphere somewhat elongated in the direction of its poles, forming a body shaped like a lemon.

‡ Tyros in mathematics may be reminded of the following facts:—

1. The circumference of a circle, or sphere, whose diameter is 1, is = 3.1416, or 3⅛ nearly. Hence, to find the circumference of any other circle, or sphere, multiply its diameter by 3⅛.



2. The area of a circle is found by multiplying its radius by half its circumference. Thus the area of the circle *A D* is equal to the area of the triangle *A B C*, the base of which, *A B*, is = the circumference of the circle. More briefly, area = $\frac{\text{rad.} \times \text{circ.}}{2}$.



3. The area of a sphere is equal to the *convex area of the circumscribing cylinder, A B C D*; and its solid content, *S*, is equal to ⅔ of the solid content of the circumscribing cylinder. Or, Area = $D^2 \times 3.1416$; $S = \frac{\text{rad.} \times \text{area}}{3}$; Weight = $10^{15} \times$ weight of Great Pyramid = $10^{18} \times 1{,}000{,}000{,}000$ tons.

forms in 365.256 mean solar days; and the third, called its *diurnal* motion, round its own axis, in 1 day, or 24 solar hours.* The *axis* is an imaginary line passing through the earth's centre, and inclined to the plane of its orbit at an angle of 66° 32′. This imaginary line remains always parallel to itself; or, what is the same thing, its extremities, which are called its *poles*, always point to the same fixed stars, and present themselves alternately to the sun,—thus giving rise to the variety of the *seasons*, as the diurnal motion, which is from west to east, causes the alternations of *day* and *night*, and of the rising, southing, and setting of the heavenly bodies. If the axis on which the earth performs her daily rotation were exactly perpendicular to the plane of her path round the sun, one constant climate would characterise the same parallel of latitude at all times of the year, and all the benefits which result to mankind from the regular succession of the seasons would have been wanting; but by the simple arrangement of the axis being inclined 23½° from the perpendicular, the All-Wise Creator has made perpetual provision for the regular recurrence of summer and winter, of seed-time and harvest.

4. MATHEMATICAL DIVISONS OF THE EARTH.—In order to describe with precision the position of places on the earth's surface, and the effects that result from its orbitual and diurnal motions, certain imaginary lines are drawn round it, which are called *great circles* when they divide it into two equal hemispheres, and *small circles* when they divide it unequally.

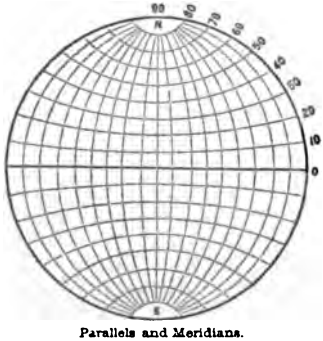
The Great Circles are the Equator, Horizon, Meridians, Ecliptic, and the two Colures.

The **Equator**, a large circle, equidistant from the poles, divides the earth into a Northern and a Southern Hemisphere. The latitude of places is measured *from* it, north and south; and their longitude, *on* it, east and west.

The **Horizon** separates the visible half of the celestial concave from the half that is invisible, and is either *rational* or *sensible*. The rational, or true horizon, by which the rising and setting of all the heavenly bodies are determined, is an imaginary plane passing through the centre of the earth, and prolonged in imagination till it attains the region of the stars. Parallel to it, and coextensive with it, is the sensible horizon, whose plane is a tangent to the surface at the point on which the spectator is placed. These two planes, although separated throughout their whole extent by a semidiameter of the earth, will yet, on account of the vast distance at which that interval is seen, be confounded together, and appear as one line in the heavens. As applied to the earth, however, the sensible or apparent horizon is the small circle which terminates our view of the surface, where earth and sky appear to meet. It enlarges or contracts, according as the spectator's eye is elevated or depressed: thus, if the eye be elevated 6 feet above the sea, the circular expanse of water visible to it will be 3 miles in diameter. The **Cardinal Points** of the horizon are north, south, east, and west; the **Zenith** is the upper pole of our horizon, and the **Nadir** the lower pole.

* But a *sidereal* day, or one measured by the stars, consists of 23h. 56m. 4s. of solar time.

The **Meridians**, or lines of longitude, are great circles passing through the poles, and cutting the equator at right angles. Each of them divides the earth into two hemispheres which, in respect to each other, may be termed east and west. There are 12 meridians commonly drawn on globes, each 15° apart, equal to a difference in time of one hour; and 18 meridians, on maps of the world, each 10° apart, corresponding to a difference in time of 40 minutes. But every place is supposed to have a meridian passing through it; and when the sun comes to that meridian, it is noon or mid-day at that place. The **longitude** of a place is its distance east or west from the **first meridian**, or that one from which we agree to count. This has varied with different nations: thus the French reckon from Paris; the Spaniards, from Cadiz; and the English, from Greenwich. But there is one meridan which has a claim above all others to be regarded as the first—viz., that passing through the Great Pyramid of Jeezeh.* When the latitude and longitude of a place are known, its exact position on the globe may at once be pointed out. The value of a degree of longitude varies according to the latitude, and is nowhere equal to a degree of latitude, except on the equator. At 60° lat. a degree of longitude is equal to 30 geographical miles, or just the half of its length on the equator; while at the poles it vanishes to nothing.



Parallels and Meridians.

TABLE SHOWING THE LENGTH OF A DEGREE OF LONGITUDE FOR EVERY 5 DEGREES OF LATITUDE IN GEOGRAPHICAL AND ENGLISH MILES.

Deg. of Latitude.	Geog. Miles.	Eng. Miles.	Deg. of Latitude.	Geog. Miles.	Eng. Miles.
0	60.00	69.07	50	38.57	44.35
5	59.77	68.81	55	34.41	39.58
10	59.09	67.95	60	30.00	34.53
15	57.96	66.65	65	25.36	29.15
20	56.38	64.84	70	20.52	23.60
25	54.38	62.53	75	15.53	17.86
30	51.96	59.75	80	10.42	11.98
35	49.15	56.51	85	5.23	6.00
40	45.96	52.85	90	0.00	0.00
45	42.34	48.78			

* This meridian passes through a greater extent of land actually inhabited than any other, and, strange to say, it also equally divides the entire habitable globe.

The **Ecliptic** is a great circle, which represents the sun's apparent annual track among the fixed stars. It derives its name from being the circle on or near which the moon must be in the case of an eclipse. Its plane makes an angle of 23½° with the plane of the equator. The sun is in the north, or highest point of the Ecliptic, on 21st June; and he is then vertical at the tropic of Cancer; he is in the south, or lowest point, on 21st December, and is then vertical at the tropic of Capricorn. The Ecliptic is divided into twelve equal parts, called **signs**, of 30° each, named from the constellations or groups of stars through which the sun appears successively to pass. These, with the days on which the sun enters them, are as follows:—

Aries, March 21. Taurus, April 19. Gemini, May 29.	*Spring.*	Libra, Sep. 23. Scorpio, Oct. 23. Sagittarius, Nov. 22.	*Autumn.*
Cancer, June 21. Leo, July 22. Virgo, Aug. 22.	*Summer.*	Capricornus, Dec. 22. Aquarius, Jan. 20. Pisces, Feb. 19.	*Winter.*

The **Colures** are two meridians which divide the Ecliptic into four equal parts, making the four Seasons of the year. One of them intersects the equinoctial points, Aries and Libra, and is thence called the Equinoctial Colure; the other intersects the solstitial points, Cancer and Capricorn, and is called the Solstitial Colure.

The Small Circles are the Tropics, the Parallels of Latitude, and the Polar Circles.

The **Tropics** are two small circles parallel to the equator, and at the distance of 23½°, north and south. They are so named because the sun, arrived at them in his apparent annual course, seems to *turn away*, either northward or southward, as the case may be. The northern is called the Tropic of Cancer, and the southern the Tropic of Capricorn, because they touch the ecliptic in the beginning of those signs.

The **Parallels of Latitude** are small circles parallel to the equator, the object of which is to indicate the latitude of places, and to connect together all places on the globe having the same latitude. Though on globes and maps of the world they are usually drawn at intervals of 10°, every place is supposed to have a parallel of latitude passing through it.

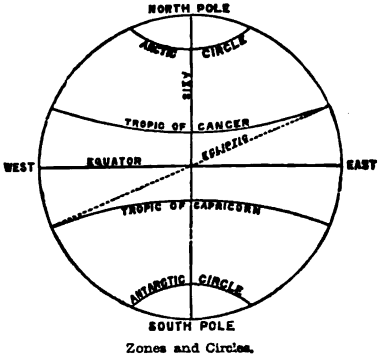
The **Polar Circles** are two small circles, drawn around the North and South Pole respectively—the former being called the Arctic, and the latter the Antarctic Circle. Their distance from the Poles is 23½°, that being the angle formed by the earth's axis and a line drawn perpendicular to the earth's orbit. When the sun is vertical to places situated on the Tropic of Cancer, his rays extend beyond the Pole to the Arctic Circle, and all countries within the Antarctic Circle are then in darkness.

Zones.—The Tropics and Polar Circles divide the surface of the earth into five great Climatal Zones or Belts—viz.:

1. One **Torrid Zone**, 47° in breadth, or 23½° on either side of the Equator, and bounded by the Tropics of Cancer and Capricorn.

Every place in this wide region has the sun vertical to it twice a-year; and as the sun's rays never fall very obliquely on any part of it, the temperature at the surface of the earth is here always very high.

2. Two **Temperate Zones**, one northern and the other southern, each 43° in breadth, lying between the Tropics and the Polar Circles. Never having the sun vertical, they are characterised by a lower temperature than tropical regions; the fruits of the earth are less luxuriant and spontaneous; and man, compelled to exercise his corporeal and thinking powers, attains to a higher degree of intelligence and civilisation than in those regions where his wants are supplied without any exertion on his part.



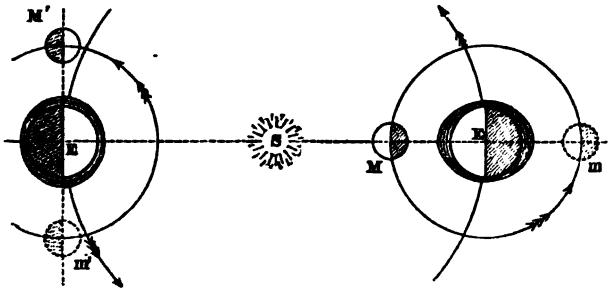
Zones and Circles.

3. The Two **Frigid Zones**, each 23½° in radius, are included within the Polar Circles. They are deprived of the influence of the sun for long intervals in winter, and have a correspondingly greater length of day in summer, when his rays fall very obliquely on the surface. These conditions, coupled with the extreme cold of the long winters, are so unfavourable to human culture and human happiness, that the tribes who inhabit the frigid zone have not been able to attain to any considerable degree of civilisation.

The Moon, or the Earth's Satellite.—The earth, on her annual journey round the sun, is attended by a moon or satellite, which revolves round her in the same way as the former does round the central luminary. Of the five planets and numerous planetoids situated between the centre of the system and the orbit of Jupiter, the earth alone enjoys the advantage of such a companion; while all the other planets possessed of satellites are not only of vastly greater dimensions, but also greatly farther from the sun. The mean distance of the moon from the earth is 239,840 miles, or little more than half the sun's radius, and she performs her revolution round her primary in one lunar month of 29 days, 12 hours, 44 minutes. It is a remarkable fact that this is also the precise time in which she rotates round her own axis. Hence, at all times, the moon presents very nearly the same face to the earth. The time of her rotation is much longer than that of any of the planets; but, so far as yet ascertained, all the other satellites belonging to our system follow the same law—that is, they rotate on their axes in the same time as they revolve around their primaries. Unlike the sun and fixed stars,

which are self-luminous, the moon, in common with all the planets and satellites, shines by reflected light derived from the central luminary. Her orbit is inclined to that of the earth at an angle of 5° 9′, but for which we should have an eclipse of the sun and moon alternately every fortnight. There is a *total* eclipse of the sun when the moon is near the earth, and the sun, earth, and moon in the same straight line; and an *annular* eclipse when, being more remote from the earth, her apparent diameter is less than that of the sun. The surface of the moon presents the aspect of a volcanic wilderness, being interspersed with enormous crateriform mountains, dykes, and lava streams, while no diversities of sea and land are discernible.

Tides.—The moon's attractive energy (aided by that of the sun at new and full moon) raises the waters of the ocean into a great tidal wave, which seems to follow the satellite in her path through the heavens. This attraction, however, directly accounts for only one high tide at any place every lunar day of 24 hours, 50 minutes; whereas, in reality, there are two high tides, occurring at intervals of 12 hours, 25 minutes. The other takes place at the same instant, but on the opposite side of the earth's surface, and is caused by the moon drawing towards her the nearer or solid part of the planet with greater force than the more distant waters.



When the moon is in the position M (*new moon*), or at *m* (*full moon*), it acts *in conjunction* with the sun. The tides on both sides of the earth are then at the highest, and are called Spring Tides. But when the moon is at M′ (*first quarter*), or at *m′* (*last quarter*), the waters rise the least, as the attraction of the sun, acting at right angles to that of the moon, considerably neutralises the effect of the latter, and produces what are known as Neap Tides.

PART II.

PHYSICAL GEOGRAPHY.

1.—MATERIALS, DENSITY, AND ATTRACTIVE POWER OF THE EARTH.—Of the interior of the planet which we inhabit we know almost nothing, our observation being confined to a portion of its external crust, or rind, rarely exceeding 14 miles in depth, or $\frac{1}{715}$ of the distance from the surface to the centre. Even this insignificant distance is attained by adding the height of the loftiest known mountain to the depth below the sea-level of the deepest ocean sounding (p. 22). The Geologist, however, without penetrating beneath the surface, but by carefully examining the order of superposition of the stratified rocks, has made us more or less acquainted with a depth of about 25 miles. Small as this portion is, when compared with the immense volume enclosed by it, it presents to our view a vast variety of substances, each of which has a character peculiar to itself. On examination, they are nearly all found to be *compound bodies*, which, on being analysed, are reducible to 65 *constituent elements*.

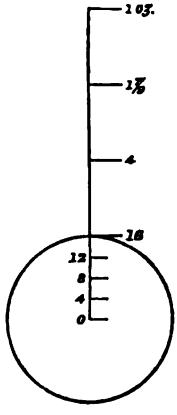
Constituents of the Earth's Crust.—These 65 elements the chemist divides into two groups,—the *Metallic* and the *Non-metallic*. The metals are 52 in number, the best known of them being gold, silver, copper, iron, lead, tin, zinc, and mercury; while the metalloids, or non-metallic class, consists of only 13, the principal of which are oxygen, hydrogen,* nitrogen, carbon, sulphur, and phosphorus. Each of these elementary substances has properties peculiar to itself; and, what is more remarkable, on each of them the Creator has stamped, in deep and indelible characters, a *particular number*, which forms, as it were, the law of its being, and determines in what proportions it shall combine with other substances. This *law of definite proportions* serves in the mineral kingdom the same end as the laws which regulate the propagation of species in the vegetable and animal kingdoms; the identity of species is rigidly preserved, and, notwithstanding the prodigious number of combinations, all confusion is avoided.

Density of the Earth.—Each of the 65 elementary substances has a *density* or *specific gravity* peculiar to itself, ranging from hydrogen, which is the lightest, to platinum, which is the heaviest; but the resulting mean density of the Earth is 5.7 the weight of its own

* From recent experiments by the late Professor Graham of London University, it would appear that hydrogen must now be regarded as a metal.

bulk of distilled water at the temperature of 68°. Thus, while the specific gravity of Mercury is nearly a fourth greater, that of Venus and Mars is nearly equal, while that of the Sun and Jupiter is four, Uranus five, and Neptune six times less. As the specific gravity of the substances forming the crust of the Earth rarely exceeds 3, the obvious inference seems to be, that the interior of the planet cannot be hollow, but, on the contrary, must consist of metals, or of other materials in a highly condensed and incandescent state.

The **Attractive Energy** which the Earth exercises on all material substances near its surface is such that, when freely suspended, they are drawn towards it with a velocity of 16 feet in the first second of time; *three* times 16 feet the next second; *five* times 16 feet the third second; and so on, following the order of the odd numbers of the scale. Comparing the Earth, in this particular, with the other planets, we find that bodies falling towards the surface of Mars descend with only a fourth of this velocity; while in Jupiter the velocity is two and a half times greater. At great elevations above the surface the intensity of the force of gravitation decreases in the *inverse ratio of the square of the distance*. Thus, a body which (in a spring balance) weighs 16 ounces at the surface, will weigh only 4 ounces at the distance of two semi-diameters from the centre, or one semi-diameter above the surface; while at the distance of four semi-diameters it will weigh only 1 ounce. *Under* the surface the law of decrease is very different, it being there *directly as the distance* from the centre. Thus, at one thousand miles below the surface the body will weigh 12 ounces; half-way towards the centre, 8 ounces; at the distance of a thousand miles from the centre, 4 ounces; while at the centre the pressure on the balance will be nothing. The accompanying diagram will render these observations more intelligible to the pupil.



2. CONFIGURATION OF THE SURFACE.—The terraqueous globe must be supposed to have assumed its present spheroidal form when rotating in its primitive incandescent state. This form the vast collection of waters now on its surface powerfully tends to perpetuate—*first*, by their capacity of yielding to the centrifugal force arising from the planet's rotatory motion; and, *secondly*, by their filling up innumerable depressions in its crust—depressions which, it is now certain, exceed in depth the highest elevations of the land. These elevations very rarely amount to the $\frac{1}{800}$ part of the radius, and, therefore, scarcely interfere with the regular form of the planet. In fact, the mountain-chains on the globe produce no greater deviation

from its spheroidal shape than the small protuberances on the rind of an orange do on its general form.

Division into Land and Water.—The surface of the earth, which, as we have already seen, comprises an area of 196,712,850 square miles, is very unequally divided into land and water. The total area of the land is estimated at 52,000,000 sq. m., or a little more than $\frac{1}{4}$ of the entire surface; while the waters cover 144,712,850 sq. m., or nearly $\frac{3}{4}$ of the whole.* The land is, moreover, very unequally distributed over the surface: thus, the northern hemisphere contains three times as much land as the southern; the eastern hemisphere, or Old World, contains twice as much as the western; and if a great circle be drawn round the globe, having London as its centre, it will divide the surface in such a way as that nearly all the land will be in one hemisphere—which may therefore be called the *continental hemisphere;* while the other, or that which has Antipodes Island, near New Zealand, as its centre, will be nearly all water, and may therefore be called the *oceanic hemisphere*—only that it contains Australia and a portion of South America. If we regard the earth as divided into zones instead of hemispheres, we find that the North Temperate Zone, or that in which the continent of Europe is situated, is the one which contains the greatest proportion of land.

Continents.—The land surface of the globe is further broken up into huge masses, called continents, which are six in number—viz., Europe, Asia, Africa, North America, South America, and Australia, but should Antarctica turn out to be a continent, the number will be seven. These, however, are not always detached from each other, but collected into groups, the members of which are generally united by isthmuses. Properly speaking, there are only three continents—viz., *first*, the Old World, containing Europe, Asia, and Africa; *second*, the New World, embracing North and South America; and *third*, the Australian continent—the only important mass of land in the oceanic hemisphere, with the exception of the recently-discovered countries within the Antarctic Circle (*see* p. 26). Of these grand continents the eastern or Old World is by far the largest and most important, having an area of 32,500,000 sq. m., a maritime coast-line of 60,000 m., and a pop. of 1,312,000,000. The area of the western continent, or New World, is 16,000,000 sq. m., being almost exactly $\frac{1}{2}$ of the former; its pop. 80,000,000, or $\frac{1}{16}$ of the Old World; while its coast-line is only 32,000 m., or but little more than $\frac{1}{2}$ of the Old World. Australia has an area estimated at 3,000,000 sq. m., being $\frac{1}{5}$ of the western continent, and a population of 1,600,000, or $\frac{1}{20}$ of America.

Contour and Elevation.—The following are some of the comparisons, equally interesting and curious, that have been drawn by Carl Ritter and other geographers between the two great continents, in respect to their forms of *contour* and *relief*:—

1. The greatest length of the Old World is from east to west, while that of the New is from north to south; in other words, the eastern continent has its greatest extension in the direction of the *parallels*, while

* The exact ratio of land to water is as 1 : 2854.

the western has its greatest extension in the direction of the *meridians*. 2. The greatest extension of both continents towards the north and south is nearly under the same meridians. Thus, the Cape of Good Hope is nearly in the same meridian with Cape Nordkyn in Norway; the peninsula of Malacca with Cape Severo in Siberia; and Cape Horn with the north-west angle of Greenland. The last-mentioned country, however, is now known to be detached from the North American continent. 3. Both continents attain their greatest extension from west to east along the same parallel—viz., that of 30° N.* 4. Both continents spread out widely towards the north, where they closely approach each other; both are abruptly terminated by the Arctic Ocean in nearly the same latitude —viz., that of 72°; whereas toward the south they widely diverge, and narrow down to single promontories. 5. In either continent a large portion of the area is nearly detached from its principal mass: thus Africa is nearly severed from the one continent, and South America from the other. 6. All the great peninsulas of both continents follow a southerly direction; as the Scandinavian, Spanish, Italian, Hellenic peninsulas, Africa, Arabia, Hindostan, Further India, Corea, and Kamtschatka, in the one; and Alaska, California, South America, Florida, and Nova Scotia, in the other. The only important exceptions to this generalisation are Jütland in the Old World, and Yucatan in the New, both of which stretch *northward*; and Asia Minor in the former, and Russian America in the latter, which project towards the *west*. 7. The opposite coasts of the two grand continents are strikingly conformable to each other, the projections of the one being opposite to the indentations of the other, though separated by the breadth of the Atlantic: thus Brazil stands opposite to the Gulf of Guinea; Western Africa to the Gulf of Mexico; Nova Scotia to the Bay of Biscay; while the opposite coasts of Greenland and Norway are nearly parallel. 8. Looking at the two continents in another way, we find that Africa with Madagascar has its counterpart in South America with the Falkland Isles; while Florida and the West Indies have a similar correspondence with Malacca and the East Indian Archipelago. 9. Taking the six separate continents, it is a remarkable fact that, with the exception of Africa, they all present to the ocean on their northern sides broad flats of low-lying land; while their southern extremities are rocky, pointed, and elevated. Again, while Africa, South America, and, we may almost add, North America, contract toward the south into single promontories, each of the others sends out three separate projections, which curiously correspond, each to each. Thus the Spanish peninsula resembles Arabia; Italy with Sicily corresponds to India with Ceylon; and the Hellenic peninsula, with its adjacent islands, to Further India with the Malay Archipelago. 10. But the most important feature of configuration is that which has reference to their comparative lengths of *coast-line*. While the three southern continents present to the ocean an almost unbroken outline, neither receiving its waters into their bosoms nor projecting into it any important peninsulas, the three northern ones are highly indented, though in very different degrees, their masses evincing a tendency to break up into members. Thus, while Asia and North America has each an extensive line of coast, Europe has wholly surrendered herself to the ocean, as if conscious that, at a future time, that element would become one of the chief sources of her prosperity.

Vertical Relief.—In regard to the lines of vertical relief, on the other hand, the following are the most important generalisations:—

1. All the continents rise gradually from the sea-shore towards the in-

* Strange to say, this is the exact latitude of the Great Pyramid.

terior, where they attain their maximum elevation; and thus each of them presents to the surrounding ocean two great slopes, which greatly differ, however, in length and degree of inclination. 2. In the Old World, the long gentle slope is inclined toward the north, and the short abrupt slope toward the south; while in the New World the gentle slope is toward the east, and the abrupt toward the west. 3. But while each of the grand continents has thus a law peculiar to itself, it is also influenced by the law of the other. Thus, though in the Old World the long or gentle slope is toward the north, and the short or abrupt one toward the south, it is also true that the slope fronting the east is more gradual than that fronting the west. In like manner, though in the New World the longer slope fronts the east, and the shorter the west, it is also true that the slope which fronts the north is gentler than that which fronts the south. 4. The elevated ridge formed by the intersection of the great slopes or *watersheds* is usually occupied by lofty mountain-chains, and constitutes the grand *water-partings* of the different continents. Hence in the Old World the general direction of the principal mountain-ranges is from east to west, while in the New it is from north to south; while in both they extend in the direction of the *greatest length* of the continents. Thus, in the eastern continent, one immense mountain-chain extends, with few interruptions, from the western extremity of the Pyrenees to the vicinity of Behring Strait; while in the western, an almost unbroken range extends from the north-east angle of Alaska to the southern extremity of Patagonia. 5. This law holds equally true in regard to all the more important peninsulas and islands. Thus Scandinavia, Italy, Malacca, Corea, Kamtschatka, and Lower California, together with Great Britain, Corsica, Sardinia, Sicily, Crete, Madagascar, Sumatra, Java, Japan, Cuba, Hayti, Jamaica, and New Zealand, are all traversed by mountain-ranges in the direction of their greatest lengths. 6. While in both hemispheres the reliefs go on increasing from the poles to the equator, the highest elevations of the eastern hemisphere occur in the vicinity of the Tropic of Cancer, while in the western they are found near the Tropic of Capricorn: compare the positions of Mount Everest, in the Himalaya, with that of Aconcagua, in the Andes. 7. A remarkable similarity exists between Europe and Asia in respect to their reliefs. Thus the Pyrenees and Alps correspond with the Taurus, Caucasus, and Himalayan ranges; the basin of the lower Danube has its counterpart in Tonquin; European Turkey corresponds with Further India; Venetian Lombardy with the basin of the Ganges; while Delhi, Calcutta, and Bombay at once suggest Milan, Venice, and Genoa. 8. Notwithstanding the imposing height of the various mountain-chains, the mean elevation of the continents depends far less on this than on the general configuration and extent of the plains and table-lands. For example, if the entire mass of the Alps were pulverised and distributed over the whole extent of Europe, its surface would not thereby be raised more than 22 feet above its present level; while, on the contrary, were the great plateau of Spain, which has an elevation of only 2000 feet, levelled down and spread in a similar manner over the continent, the general surface would be raised 76 feet. Taking each of the continents separately, the average elevation of Europe would be 671 feet; of North America, 748 feet; of South America, 1132 feet; and of Asia, 1151 feet: and it is estimated that if all the inequalities of the earth's surface were reduced to a uniform natural level, the land would have an elevation above the sea-level of 925 feet. If these data could be relied on, the real level of the earth's surface, as distinguished from that of the sea, could

be approximately estimated at 280 feet higher than the present sea-level.*

3. THE OCEAN.—About 144,712,850 square miles, or nearly three-fourths of the entire superficies of the globe, are permanently covered with water, the surface of which forms a true *natural level*, all the parts of which are nearly equidistant from the earth's centre. Such a level, in the case of a rotating body like the earth, the materials of which were once capable of yielding to the influences of gravity and of the other forces that acted upon it, is of a spheroidal form, like that of an orange, and differs materially from a dead, horizontal level, such as the floor of an apartment. The surface of lakes, deserts, plains, and even of the continents, conforms itself to this natural level; it forms the limit from which all the elevations of the land and the soundings of the ocean are measured; and, in constructing a canal or a railway along the surface, an allowance must always be made for this difference, amounting to about 8 inches in the mile. The waters of the ocean are salt and bitter, their density varying according to the quantity of saline matter they contain. The quantity of salt, the origin of which is unknown, varies in different places from 3.5 to 4.5 per cent. The surface temperature of the ocean varies with the season of the year and with latitude. Below 100 fathoms, however, the temperature is not affected by these causes. By numerous experiments in 1869 (conducted by Professor Wyville Thompson, Mr Gwyn Jeffreys, and Dr Carpenter, in H.M.S. Porcupine, in the North Atlantic), it was found that the temperature rapidly declines from the depth above specified till we reach 1000 fathoms, when it sinks to 38° Fahr., whilst at 2435 fathoms it is only 36°.5. Strange to say, at a corresponding depth in tropical seas, it is only 30° Fahr. The same explorers also found (contrary to all former ideas on the subject) that animals of many orders and genera—some of them, too, of very high organisation—exist at the profoundest depths of the ocean. Sponges, annelids, molluscs, echinoderms, and crustaceans, have already been found in vast numbers. One expedition alone has added 127 species to the molluscs already known to exist in British waters. These, doubtless, are to be regarded as mere prognostications of a new world about to be revealed to naturalists.

The Atlantic Ocean deserves the first place, for though less than half the size of the Pacific, it is the best-known to Europeans; and of all the great waters of the globe it has always been the most important, as that on whose shores and gulfs the greater number of the civilised nations of the earth have taken up their abode. It occupies a huge, angular, canal-shaped basin, whose sides are nearly parallel

* It may be interesting to remember that the Great Pyramid indicates the correct number as 215 feet—that being the height of its base above the sea.

to each other—the projections of the one side standing opposite to the indentations of the other; extends from N. to S. about 9000 miles; separates the Old World, on the east side, from the New on the west; and connects the Arctic with the Antarctic Ocean. It varies greatly in breadth in different parts, being 4100 miles between the shores of Marocco and the Isthmus of Florida; 1700 miles between Brazil and Sierra Leone; and 900 miles between Greenland and the coast of Norway. The *area* is estimated at 35,000,000 square miles, or nearly half the area of the Pacific. It is distinguished from all the other oceans by the great depth of its waters; by the fewness of its islands; and by the great number of seas and gulfs which it projects into the continents that confine its waters. It varies greatly in *depth*, from 300 fathoms near the shores to 46,000 feet in the latitude of the Azores; while at midway between Tristan d'Acunha and Buenos Ayres, and near the middle of the South Atlantic, Captain Denham, of H.M.S. Herald, found the bottom at a depth of 7706 fathoms, or 8¾ miles—being the greatest ocean-depth hitherto ascertained. A remarkable steppe, or raised bottom, occurs between Ireland and Newfoundland, which is now known as the Telegraphic Plateau, being that on which rest the great submarine telegraphic cables which unite Europe with America.

The principal **Branches** of the Atlantic are the Baltic, the North Sea, the Irish Sea, the English Channel, the Bay of Biscay, the Mediterranean, and the Gulf of Guinea, on the east side; and Hudson Bay, Gulf of St Lawrence, Gulf of Mexico, and the Caribbean Sea, on the west. The principal **Islands and Archipelagos** are, Iceland, the British Isles, Azores, Madeira, Canary and Cape Verd Isles, near its eastern shores; and Newfoundland, Cape Breton, Bermudas, Bahamas, Antilles, and the Falkland Isles, near its western. Its chief **Affluents** from the Old World are the Neva, Rhine, Loire, Tagus, Rhone, Po, Danube, and Don; Nile, Senegal, Niger, Congo, and Orange; and from the New World, the St Lawrence, Mississippi, and Rio Grande del Norte; the Orinoco, Amazon, and Rio de la Plata. Among its principal **Currents** are, the Equatorial Current, which flows from the coast of South Africa to the Caribbean Sea, with a velocity of from 30 to 70 miles a-day, and a temperature of 80°; and the far more celebrated Gulf Stream, which, leaving the Gulf of Mexico, flows through the Strait of Florida with a velocity of 80 miles a-day, and a mean temperature of 81° Fahr. "After having run 3000 miles towards the north, it still preserves, even in winter, the heat of summer. With this temperature it crosses the 40th degree of north latitude, and there overflowing its liquid banks, it spreads itself out for thousands of square leagues over the cold waters around, and covers the ocean with a mantle of warmth that serves so much to mitigate in Europe the rigours of winter. Moving now more slowly, but dispensing its genial influences more freely, it finally meets the British Islands. By these it is divided, one part going into the polar basin of Spitzbergen, the other entering the Bay of Biscay, but each with a warmth considerably above the ocean temperature." The **Trade-Winds** blow regularly in its intertropical regions; but beyond these limits the winds are variable. Thus we see that the waters of the Atlantic between the equator and the 40th parallel are kept in a perpetual whirlpool, the circumference of which cannot be less than from eleven to twelve thousand miles. In the centre of this

revolving current there is a mass of nearly stagnant water, covered by dense masses of an evergreen sea-weed, called *Fucus Natans*, which made so lively an impression on the mind of Columbus and his crew when about to discover America in 1492.

The **Pacific Ocean** separates America on the east, from Asia, Malaysia, and Australia on the west; and is by far the grandest expanse of water on the globe, having an area estimated at 72,000,000 square miles, or equal to one-half the entire waters of the globe. Unlike the Atlantic, of which it is fully double the size, its greatest length is from E. to W. along the equator—a direction in which it extends 175°, or upwards of 12,000 miles, reckoning from the coast of Peru to the Malay peninsula. Its greatest breadth, between Behring Strait and the Antarctic Circle, is 9000 miles, corresponding with the extreme length of the Atlantic. Its shape is somewhat oval, being widest in the middle and contracting towards both extremities, especially in the north, where the opposite shores are only 36 miles apart. The Pacific Ocean was unknown to Europeans till the year 1513, when it was discovered by *Vasco Nunez de Bilbao*, from the summit of a mountain near the Isthmus of Panama. *Magalhaens*, who sailed from America to the Philippine Islands, in 1521, bestowed on it the name of Pacific, in consequence of the calm and delightful weather he experienced while navigating its surface.

The coast-line, on the American side, though bold, is very little indented by the ocean, the principal **Inlets** and **Branches** being, Behring Sea, or the Sea of Kamtschatka, the Gulf of California, and Bay of Panama; while of those on its western side the chief are, the Sea of Okhotsk, Sea of Japan, Yellow Sea, China Sea, and Gulf of Siam, with the Gulf of Carpentaria in Australia. This ocean is especially characterised by the immense number of **Archipelagos**—many of which are of volcanic, and others of submarine coral formation—that are scattered over its surface, especially in its western and central parts. North of the Tropic of Cancer the principal groups are, the Japan Isles, Kurile Isles, Aleutian Isles, Queen Charlotte's Island, and Vancouver Island. South of the Tropic of Cancer, and proceeding from W. to E., we find Malaysia, or the Malay Archipelago, the Ladrones, Caroline Isles, Marshall Archipelago, Sandwich Isles, and the Galapagos Islands near the South American coast. Then returning westward, we come to the Marquesas, Low Archipelago, Society Islands, Hervey or Cook's Islands, Navigators' Islands, Friendly Islands, Feejee Islands, Queen Charlotte's Islands, Saloman Isles, New Hebrides, New Caledonia, and New Zealand. Its chief **Affluents** from the Old World are, the Amour, Hoang-Ho, Yang-tse-Kiang, Cambodia, Meinam; and from the New World, the Frazer, Columbia, and Colorado. The principal **Current** of this ocean is called the Equatorial Current, which, originating in the Antarctic Drift Current, flows N. along the western shores of South America to the coast of Peru, and then W. through the Pacific, where it occupies the entire space between the tropics, producing a genial coolness, where otherwise the heat would be almost insupportable. Opposite Lima, on the Peruvian coast, its temperature is 14° below that of the neighbouring ocean; and even at Payta, which is 7 degrees farther N., it is 10° colder than the sea in its vicinity. Farther W. it gradually loses its cooling powers, which, however, are perceptible to the vicinity of the Marquesas.

The Indian Ocean separates Malaysia, Australia, and Tasmania, on the east, from Arabia and Africa on the west; its northern boundary is formed by the shores of India and Biluchistan, and its southern, by the Antarctic Circle. Its shape would have approximated to an equilateral triangle, had not Asia projected its hugest peninsula into its apex, and given it a very irregular form. Extending from a little beyond the Tropic of Cancer to the Antarctic Circle, its greatest length is 90°, or about 6000 miles; while its extreme breadth, from Cape Agulhas to Tasmania, is expressed by the same number. The area is generally estimated at 25,000,000 square miles, or 20,000,000 when its southern boundary is formed by a line connecting South Cape in Tasmania with Cape Agulhas in Africa.

In proportion to its magnitude it equals even the Atlantic as to the number and extent of the **Branches** which it sends into the land, especially on its northern frontier. The principal of these are the Bay of Bengal; the Arabian Sea, with its members, the Gulf of Kachh, Gulf of Oman, and the Persian Gulf; the Gulf of Aden with the Red Sea; the Channel of Mozambique; Encounter Bay, St Vincent Gulf, Spencer Gulf, and the Great Australian Bight, in Australia. The only **Islands** of considerable magnitude are Ceylon and Madagascar; but smaller islands and archipelagos are numerous, as Bourbon, Mauritius, Comoro, Amirantes, Seychelles, Socotra; the Laccadive, Maldive, and Chagos archipelagos; Rodrigues; the Andaman, Nicobar, and Mergui archipelagos; Keeling Islands; St Paul and Amsterdam; Kerguelen or Desolation Island, &c. Its larger **Affluents** are nearly all from the Asiatic continent, as the Irawadi, Brahmaputra, Ganges, Mahanadi, Godaveri, Krishna, Tapti, Nerbudda, Indus, and Euphrates; together with the Zambezé from Africa, and the Murray from Australia. The waters of the Indian Ocean being as hot as even those of the Gulf of Mexico, several warm **Currents** flow out of it in various directions. One of these originates in the Bay of Bengal, and after passing through the Strait of Malacca, unites with other warm currents from the Java and China seas, and then flows out into the Pacific like another Gulf Stream—to which, indeed, both in its direction and effects, it bears numerous and striking resemblances. Another current, from the Arabian and Red Seas, flows southwards between Africa and Madagascar, till it meets the Cape Current from the Atlantic, south of Cape Colony. The latter current, formerly supposed to be flowing northward along the west coast of Africa, is now ascertained to be flowing southward, till, after uniting with the Mozambique current, both find their way into the intensely cold waters of the Antarctic Ocean.

The **Arctic Ocean**, or north polar basin, is bounded in general by the northern shores of Europe, Asia, America, and Greenland, all of which remarkably conform to the parallel of 72°; and hence its form is nearly circular, and its usual breadth 2500 miles. In other directions it is bounded by the Arctic Circle, which separates it from the Atlantic and Pacific Oceans, and forms the northern limit of sunshine in winter. Its greatest length from Behring Strait to that point on the Norwegian coast at which the Arctic Circle cuts the land—that is, along the meridian of 12½° E.—is 3240 miles; and the total area is estimated at 5,000,000 square miles. Except on the Atlantic side, the waters of this ocean are virtually land-locked,

the outlet by Behring Strait being only 36 miles wide, with a maximum depth of 25 fathoms. Its most practicable entrance for ships is between Norway and Iceland, that being the path pursued by the north-east branch of the Gulf Stream; the remainder of the opening towards the Atlantic being either occupied by Greenland and innumerable other islands, or blocked up by gigantic icebergs. The highest latitude hitherto attained in this ocean is that of 83° 15′, being only 7° from the North Pole—a point which in all likelihood will soon be reached, as the ocean is usually open to ships, and contains no trace of a continent like that which probably surrounds the South Pole. The long sought *North-West Passage*—that is to say, a navigable passage from European countries to China along the northern coast of America—was at last, after innumerable unsuccessful efforts continued for two centuries, effected by Captain Maclure, who, in 1856, achieved the hazardous task by sailing out of the Pacific through Behring Strait; then, turning eastward, pursued his course along the coast till he came to Cape Bathurst, at the entrance to Coronation Gulf; then northward, along the west coast of Banks' Land to Melville Sound, which he entered; and continued his dangerous voyage eastward to Baffin Bay and Davis Strait; and finally entered the Atlantic. It now appears, however, that the honour of the discovery is really due to Sir John Franklin, who left England in search of a north-west passage in 1845, but who perished with all his crew in 1847. Notwithstanding the success of this brilliant exploit, the route thus discovered is all but absolutely impracticable, and can never be of any avail in a commercial point of view; while the same route in the opposite direction remains still unaccomplished.

The principal **Branches** of the Arctic Ocean are, the White Sea, in Europe; the Gulfs of Kara, Obi, and Yenisei, in Asia; Behring Strait, between Asia and the New World; and Coronation Gulf, Melville Sound, Barrow Strait, Lancaster Sound, and Baffin Bay, in North America.

The **Rivers** that find their way into this ocean are, for the most part, of great magnitude. Having their sources as far south as the 50th parallel, in both hemispheres, they drain an area fully equal to that of the ocean which they enter, or considerably more than that of the continent of Europe. The chief of those from the Old World are the Dwina, Petchora, Obi, Yenisei, Lena, and Kolyma; and from the New World, the Colville, Mackenzie, and Coppermine. The northward direction of these rivers imparts a striking peculiarity to the annual thawing of their waters. As their upper courses belong to more temperate latitudes than their lower, the former are melted by the heat of the sun at an earlier date than the latter, and discharge their liberated contents into the valleys and estuaries below, which, being thus inundated by waters of a comparatively elevated temperature, speedily give way in turn; and thus, in a comparatively brief period, the entire ocean is covered with an immense volume of fresh water of more than 32° of temperature, which now becomes the prime mover of that **ocean-current** that, every summer, drifts the polar ice into the Atlantic. Another cause, however, co-operates in producing this phenomenon. The north-east branch of the Gulf Stream from the Atlantic enters the Arctic Ocean between Norway on the one side, and Iceland and Spitzbergen on the other. Doubling

the North Cape, it flows eastward, close to the shores of Lapland and Siberia, the rigorous climate of which it materially softens. Arriving at Behring Strait, it is greatly increased in volume and force by the Japan current from the Pacific, and now pursuing its circuitous journey, it eventually arrives at Banks' Land and the Parry Islands. The **Islands** of this ocean are but imperfectly known. They are for the most part uninhabited, and are important only as the temporary abodes of the whale, seal, and walrus hunter. The principal groups are the following: Spitzbergen, Novaia Zemlia, and New Siberia, between the Pole and the Eastern Continent; and the great North American Archipelago, the chief members of which are the Parry Islands, Banks' Land, Boothia Felix, Cockburn Island, Cumberland Island, Cornwallis Island, North Devon, Ellesmere, and Greenland.

The **Antarctic Ocean** is far less accurately known to geographers than any of the other great oceanic basins, the cold being more intense, the winds and seas more boisterous, and the ice extending at least 10° degrees nearer the equator than in the Arctic Basin. The highest latitude yet attained in this ocean was reached by Sir James Ross, who, in 1841, penetrated to lat. 78° 4′, or within 815 miles of the South Pole. In this latitude, and immediately S. of New Zealand, his progress southward was arrested by an ice-bound shore, on which he landed, and which, in honour of his sovereign, he named South Victoria Land. Other navigators, in approaching the pole from other directions, have encountered similar obstructions at considerably lower latitudes, as Adelie Land, S. of Australia; Enderby Land, S. of Madagascar; and South Shetland, S. of Cape Horn. Probably, therefore, almost the entire area embraced by the Antarctic Circle is occupied by a continent which is nearly circular in form, and more than twice the size of Australia; which is covered by eternal snows, and wholly devoid of vegetation; the shores of which are guarded by gigantic volcanoes, or by impenetrable barriers of ice; and whose interior has never been trodden by the foot of man. One of these volcanoes, named Mount Erebus, was found by Sir James Ross to be 12,400 feet above the level of the sea, and in a state of constant activity; while Mount Terror, an extinct volcano, has an altitude of 9000 feet. The seas around this continent are remarkably shallow, the depth rarely exceeding 400 fathoms. The temperature of the hottest month, even at the level of the sea, ranges from 11° Fahr. to the freezing-point of water. The **barometric pressure** is also greatly less than in tropical regions (*see* p. 28). Sir James Ross determined the position of the **South Magnetic Pole** to be within the limits of South Victoria Land—viz., in lat. 75° 5′ S., and lon. 145° 8′ E.

4. THE ATMOSPHERE.—Many of the phenomena of physical geography are inexplicable without some previous acquaintance with that thin, aerial, and invisible fluid called the Atmosphere, which envelops the earth on all sides, which shares in its diurnal motion, and which accompanies it in its annual journey round the sun. In respect to **composition**, atmospheric air

consists almost exclusively of two gaseous, elementary substances, oxygen and nitrogen, in the proportion of 21 parts by volume of the former, and 79 parts of the latter, or, 23 parts by weight of oxygen, and 77 of nitrogen. It also contains a little carbonic acid gas, a minute though very variable quantity of aqueous vapour, and a trace of ammonia. The oxygen and nitrogen are not chemically combined, but exist in a state of *mixture;* yet their relative proportions remain invariable, being the same on the summits of the highest mountains as in the deepest recesses of the surface, the same in the country as in the crowded city, and the same in the tropical as in the frigid zones. On the contrary, the carbonic acid and vapour of water vary greatly in quantity in different localities, the one being affected by local causes, and the other mainly by changes of temperature.

Pressure of the Atmosphere.—Notwithstanding its extreme lightness, the air, in common with all other material bodies, is affected by the all-pervading law of gravitation, and exerts a pressure on the surface of the earth which can easily be measured. According to Dr Prout, 100 cubic inches of pure dry air, at 60° of temperature, and the barometer standing at 30 inches, weigh 31 grains. The weight on every square inch of surface at the level of the sea generally amounts to about 15 lb. avoirdupois, being the same as the weight of a column of water of equal base, 34 feet high, or of a column of mercury 30 inches high. Supposing the surface of a man's body to measure 15 square feet, it sustains a pressure of no less than 14 tons. Being a highly elastic fluid, the density and pressure of the atmosphere rapidly diminish as we ascend upward, 1000 feet of ascent (near the surface) roughly corresponding to a fall of 1 inch in the barometer; or, to speak more exactly, *As the elevation increases in arithmetical progression, the density and pressure decrease in geometrical progression.* Thus, at the level of the sea, the pressure on each square inch is 15 lb., or equal to a column of mercury 30 inches high; at 3.4 miles above the surface the pressure is only 7½ lb., or 15 inches of mercury; and at 6.8 miles of elevation, 3¾ lb., or 7½ inches of mercury. From this the application of the barometer in ascertaining the heights of mountains becomes obvious.

Height of the Atmosphere.—Many reasons combine to induce the belief that the atmosphere does not extend to an indefinite height, but terminates at an altitude of from 45 to 50 miles.* Its height is also different in different latitudes, being considerably greater between the Tropics than within the Polar Circles. This is owing partly to the greater centrifugal force that exists in the equatorial than in the polar regions (caused by the rotation of the earth around its axis), and partly to the high temperature of the earth's surface in low latitudes, which causes the air in contact with it to expand at the rate of $\frac{1}{491}$ of its volume at 32° Fahr. (= $\frac{1}{273}$ Cent.) for every increase of 1°. Sir James Ross observed that, in South Victoria Land, lat. 78°, the

* Glaisher has attained a height of 36,670 ft. in a balloon.

barometric pressure rarely exceeded 29 inches, whereas in the torrid zone it averages about 30 inches.

Temperature of the Atmosphere.—When ascending the side of a mountain-chain, the traveller feels the cold increasing perceptibly in proportion to his elevation; and should the chain be sufficiently lofty, he will find the summit covered with perennial snow. If the ascent is made within the tropics, this difference of temperature arising from elevation is beautifully represented to the eye by a corresponding succession of climatic zones, each of which is occupied by a fauna and flora peculiar to itself, but quite analogous to the succession of zones, with their respective faunas and floras, that is traversed when proceeding from the equator to either pole. This beautiful phenomenon, of which the Andes and Himalaya afford the most striking examples, depends on the fact that any change in the density of the atmosphere is uniformly accompanied by a corresponding change in its temperature. When a gaseous body expands, a portion of its heat becomes latent, and the amount of heat required to raise it to any given temperature increases the more the gas expands. If there be no source of heat from which this additional quantity can be obtained, the gas will cool during expansion, by a portion of its free heat becoming latent. Generally speaking, the thermometer sinks 1° of Fahr. for every 300 feet of elevation for the first mile above the surface, but the rate is influenced by many causes. For higher elevations no regular law has been ascertained.

Winds.—When the air is put in motion by any cause, a wind is produced; and no cause so powerfully contributes to such motion as local changes of temperature, arising from the unequal degree in which portions of the earth's surface are heated by the solar rays. In order to obtain a clear notion of the nature and direction of winds, it will be necessary to leave out of view, for the time, the various inequalities of the earth's surface, and to regard it as uniformly spherical. In tropical regions, where the sun is always vertical at noon, his rays fall perpendicularly on the surface, and consequently with a far greater heating power than if they came down slantingly, as in the temperate and frigid zones. The heated surface communicates its own temperature to the stratum of air in contact with it, causing the latter to expand, and, with a diminished density, to ascend through a higher stratum, supported by which it flows off towards the nearest cold region, its place meanwhile being supplied by other currents proceeding from adjacent cold regions. Hence we should expect that at any point on the surface in the northern hemisphere, northern winds (that is, winds *from* the north) would prevail throughout the year; while everywhere in the southern hemisphere they would blow incessantly from the south. And, were the earth at rest, and its surface wholly land or water, such would be the actual direction of the winds throughout the year. But the earth rotates on its axis from west to east every twenty-four hours, its equatorial parts moving at the rate of 1000 miles per hour, while at the poles the surface remains at rest. Hence, in passing from the higher latitudes towards the equator, the cold currents of

air arrive progressively at regions of increased rotatory velocity; and as they cannot keep pace with this increase of motion, they necessarily lag behind, and form currents flowing in a direction opposite to the rotation of the globe, or from *east* to *west;* and thus, by the combined effects of the rotation of the globe and the difference of temperature at its surface, the northern and southern currents are deflected and modified, so as to become respectively the permanent north-easterly and south-easterly currents, forming the magnificent phenomenon of the **Trade-Winds**. These winds extend, with occasional interruptions and modifications, from the vicinity of the equator to the 28th or 30th parallel, N. and S.—the limit varying according to the sun's northern or southern declination. Their action is most regular in the Atlantic and Pacific Oceans; but their influence is neutralised in the vicinity of continents and large islands by the currents that are generated on the land. In the Indian Ocean and south-eastern Asia, the trade-winds undergo remarkable modifications, changing their direction at certain seasons of the year, and hence called **Monsoons**. These winds prevail over a tract extending from lat. 7° S. to the Tropic of Cancer, and from the E. coast of Africa to Japan, Siberia, and the W. Pacific Ocean. They blow for six months of the year in one direction, and for the other six in an opposite one; the change occurring about the 15th April and the 15th October. On the north side of the equator the N.E. monsoon prevails, with little variation, from October to April; while from April to October it is replaced by the S.W. monsoon. In the W. part of the Indian Ocean south of the equator the N.W. monsoon blows from October to April, constituting the rainy season; while from April to October the S.E. monsoon holds sway, and forms the dry season. The last-named monsoon may be considered as identical with the S.E. trade-wind. In general, the monsoons blow towards the continent during summer, and in an opposite direction in winter. They regulate the alternations of the wet and dry seasons throughout south-eastern Asia—the rainy season of the W. coast of India corresponding with the prevalence of the S.W. monsoon, and that of the E. coast with the S.E. monsoon. They are also of great importance to commerce, for by them a ship may be wafted to a distant port, where she remains till the monsoon changes, and is then aided by it home again.

Zone of Calms and Variable Winds.—In the Atlantic and Pacific oceans, immediately under the equator, where the N.E. and S.E. trade-winds approach each other, there occurs a zone of calms and variable winds; there being a calm when the opposing winds wholly neutralise each other, and a wind, which is usually from the east, when either predominates. This zone varies in breadth from 150 to 500 miles, according to the season of the year, and is perpetually shifting its position. In March and April it extends from lat. 7° N. to 2° N.; in July and August from 7° N. to 12° N.; thus ranging over 10° of latitude. As each of the trade-winds has traversed a great extent of ocean before arriving at the equator, it becomes highly charged with vapour; and hence this zone is characterised by

constant precipitation, the rain falling at irregular intervals and at all hours of the day. The heat is great, and thunderstorms are frequent; and perhaps there is no part of the ocean more dreaded by mariners than the zone of calms and variables.

Region of S.W. and N.W. Winds.—We have seen that the heated air of the Torrid Zone, forced upwards by colder and denser currents, finds its way to the Frigid Zones. On quitting the tropics it begins to cool, and consequently to descend, arriving at the surface about the 30th parallel of latitude in both hemispheres. Were the earth stationary, and were there, also, no opposing current from the polar regions, it is obvious that south winds would prevail over the entire N. Temperate Zone, and north winds over the S. Temperate Zone. But the earth rotates from west to east, and the wind, on its way from the tropics to the poles, is ever arriving at zones of surface possessed of less rotatory velocity than itself; and it will, therefore, so far as this cause is concerned, manifest itself as a *west* wind. Combining, now, both these causes, the resultant effect is that in the N. Temperate Zone S.W. winds must prevail, while in the S. Temperate Zone N.W. winds will predominate. Both these winds, however, are subject to great irregularities, mainly owing to their being affected by the great polar currents that are ever proceeding from the poles to the equator. The winds which result from such collisions must necessarily take a *mean* direction, depending on the relative force of the opposing currents; but this direction, though very variable, is chiefly *westerly*. In the North Atlantic they are chiefly from the S.W.; and the effect is, that a sailing vessel which takes forty days from Liverpool to New York can make its return voyage in twenty-three days. South of the equator, between the parallels of 40° and 50° S., the winds are pretty regular, being generally W.N.W.; while in the N. Frigid Zone no regular succession has been observed, but northern winds are the most frequent.

Land and Sea Breezes.—On islands and near the shores of the continents, especially in warm and tropical regions, the wind during the day blows from the sea, while during the night it pursues a contrary direction. After the explanations given above, the cause of this becomes sufficiently obvious. The sea and the land are very unequally heated by the solar beams. About sunrise and sunset the temperature of both is nearly equal, and there is consequently no wind either way; but shortly after sunrise the land becomes warmer than the water, in consequence of the more powerful action of the solar rays; the temperature of the stratum of air next the surface is increased and its density lessened; it must therefore ascend to the upper regions of the atmosphere, leaving behind a vacuum, which is immediately occupied by colder and denser air from the ocean. Thus is originated a *sea-breeze*, which attains its greatest velocity at the period of the maximum heat of the day, and gradually declines towards evening. During night, when the temperature of the sea exceeds that of the land, the current of air must necessarily flow in an opposite direction, and produce what is called the *land-breeze*.

The Vapour of Water and its Products.—The quantity of vapour in the atmosphere, which is always very small, varies with the temperature, being greater when the temperature is high, and smaller when it is low. Sir John Leslie showed, by numerous experiments, that the air can hold the 160th part of its own weight of vapour in suspension when its temperature is at 32° Fahr.; the 80th part of its weight at the temperature of 59°; the 40th part at 86°; the 20th part at 113°; and the 10th part at 140°. Seas, rivers, lakes, and moist ground are the sources from which the vapour in the atmosphere emanates. When water is thus passing from the liquid into the gaseous or invisible form, it is said to *evaporate*. Evaporation takes place at all temperatures, and is caused chiefly by the action of winds and of the solar heat on the surface of the earth; and the more intense this action is, the greater becomes the quantity of moisture that rises into the atmosphere. When the air has received as much vapour as it is capable of holding in the invisible form, at any given temperature, it is said to be *saturated*. Should any more vapour enter it at this temperature, or should its temperature be reduced to any extent, the superabundant vapour instantly becomes visible, and assumes the form of mist or clouds, or is precipitated as dew, hoar-frost, rain, snow, or hail. Should the reduction of temperature take place at a considerable elevation above the surface of the earth, by means of a cold current of air coming into contact with a warmer one already at the point of saturation, **clouds** will be the form which the superabundant vapour will assume; but if the reduction takes place at a lower level, so that the cloud rests on the ground instead of floating in the upper regions of the atmosphere, it is called a **fog** or **mist**. Clouds and mist are identical in their nature, and only differ in respect to elevation; for in each of them the vapour, formerly invisible, is supposed to pass into the form of minute, visible globules, which, from being hollow within, are possessed of such buoyancy as to be capable of floating in the atmosphere. When the surface of the ground has been reduced by radiation, so that the air in contact with it falls below its point of saturation, a portion of the vapour contained in the latter becomes condensed, and assumes the form of **dew**; and when the radiation has proceeded so far as to reduce the surface below the freezing-point, **hoar-frost** is the product. The quantity of dew, however, which is deposited on any given object depends not only on its temperature, but in a great measure also on the nature of its materials, its texture, and the roughness or smoothness of its surface. Thus, while metals, stones, and wood, are found comparatively dry, living plants of every form are copiously laden with dew: substances having a close texture are unfavourable to its formation, while those that are loosely compacted, as cloth, wool, down, cotton, &c., are highly favourable; and those surfaces which part with their heat least readily, as, for example, polished metals, contract the least dew; while those that part with their heat most readily—viz., roughened or painted surfaces, contract the most. When the temperature that has led to the formation of the minute hollow vesicles of which a cloud consists has been reduced still lower, the vesicles become larger; then unite

in twos and threes; and ultimately, by reason of their density and increased gravity, fall to the ground in large drops of **rain.** When the vesicles have been exposed to an intensely cold current of air, they are congealed or solidified into minute, icy crystals; and when many of these collect together, they usually assume a highly symmetrical and beautiful shape before descending to the earth in the form of flakes of **snow.** Captain Scoresby, during his Arctic voyages, observed nearly a hundred different forms of snow-flakes, many of which were extremely beautiful. Should the snow-flakes, in descending towards the surface, pass through a warm stratum of air, they melt and become **rain-drops**; and, on the other hand, should the rain-drops, while descending, pass through a stratum of very cold air, they are converted into **hailstones.**

Distribution of Rain.—Rain falls very unequally in different regions of the globe, but in general the greatest quantity of rain falls in warm climates, as evaporation proceeds there more rapidly than in cold and temperate regions. The following generalisations, which can only be regarded as rough approximations, will be found useful:—

1. Rain is more abundant in tropical regions than under higher latitudes; but the number of rainy days is greater the farther the place is from the equator. The annual average of rain between the tropics is about 96 in., and the number of rainy days is only 80; while in the two temperate zones the average annual fall is only 37 inches, but the number of days on which rain falls varies from 54, in the N. of Syria, to 169 at St Petersburg. 2. The annual amount of rain decreases in ascending from low plains to elevated plateaux. 3. On the contrary, the amount of rain *increases* in ascending from plains to the rugged slopes of mountain-chains. Thus, while at Paris only 20 inches of rain fall annually, upwards of thrice that quantity falls on the sides of the Great St Bernard; and in England the quantity that falls in the mountainous districts is more than double that of the less elevated portions of the country. 4. The amount of rain decreases as we proceed from the shores of continents towards their interior; thus, while on the W. coast of Ireland, Norway, and Portugal, the annual average is 47, 80, and 111 inches, respectively, in central and eastern Europe it is only 15 inches. There are important exceptions, however, to this rule, arising from the direction and position of mountain-chains, and from the character of the winds (whether dry or humid) to which any given place is exposed. For example, one side of a mountain-chain may be humid, while the other is comparatively rainless. The Andes in South America, the mountains of Norway, and Mount Atlas in North Africa, afford striking examples. 5. Within the tropics, the *eastern coasts* of the continents, owing to their exposure to the trade-winds, are more humid than the western; while in the temperate zone their *western sides*, from being exposed to westerly winds charged with moisture—received in their passage across the Atlantic and Pacific Oceans—are more humid than the eastern.

5. CLIMATE.—By the climate of a place is meant the prevailing character of its weather, or all those states and changes of its atmosphere which sensibly affect the organs of plants and animals. The peculiarities of climate are mainly attributable to the following causes:—

1. **Latitude.**—This determines the amount of solar heat which the

place enjoys—which amount depends, not merely on the length of time it is continuously exposed to the solar rays, but especially on the direction of the rays when the sun is in the meridian. Between the tropics the solar rays descend vertically at noon, and hence produce their maximum effect; but the more remote the place is from the torrid zone, the rays descend more and more slantingly. 2. **Elevation.**—The more elevated any place is, the lower is its temperature; and a change of level of only a few feet will diminish the temperature of the place as much as a change of latitude amounting to many miles. In the torrid zone an ascent of 300 feet sinks the thermometer 1° Fahr.; but the rate is not uniform as the ascent is continued—less than 300 feet being sufficient for reducing the temperature another degree. A smaller elevation will also suffice for producing this effect in higher latitudes. By continuing the ascent in any latitude, we at length arrive at what is called the **snow-line**, or the **limit of perennial congelation.** This line attains its maximum elevation between the tropics, and gradually descends—though at a rate not yet exactly ascertained—as it proceeds to the poles. In the Antarctic regions it reaches the sea-level between the 67th and 71st parallel; but in the north frigid zone it is more than doubtful whether it touches the sea at all: for here the greater dryness of the climate and the perpetual day of summer occasion the complete disappearance of the snow, though the mean annual temperature is as low as zero (Fahr.) The height of the snow-line is not regulated exclusively by the degree of latitude; but depends very much on the exposure of the place, the character of the prevailing winds, and on the depth of the snow that has fallen during winter. None of the mountains of the British Isles attain the height of the snow-line; but Ben Nevis, the highest of them, whose height is 4406 feet, approaches it very closely, as it generally retains the snow in the deeper ravines all the year round. 3. **Slope** or **Aspect** at noon greatly affects the climate of a country, especially in the temperate zone. If the slope is towards the sun at noon, the rays of that luminary fall more directly on the surface, and therefore produce a greater effect than if the place is level; while, on the other hand, if the surface inclines towards the north, the contrary effect is produced. Thus, in Siberia and British America, where the slope is northward, as indicated by the direction of the rivers, the climate is incomparably more rigorous than in the British Isles and Scandinavia, though situated between the same parallels of latitude. In the south of Siberia mercury freezes in winter; whereas in Ireland the myrtle grows in the open air. Even in the same locality the greatest diversity of climate prevails on the opposite sides of a mountain-range. Thus, on the southern slopes of the Alps of the Valais, the vine attains to its utmost perfection, while the northern slope is densely covered with ice and snow. 4. **The Situation of a Country in respect to Large Tracts of Land or Water.**—The temperature of the ocean is more equable than that of the land, being less affected by the action of the solar rays and by radiation. Hence, through the agency of the winds, those countries which are situated near the ocean are less subject to the extremes

of heat and cold than other countries under the same latitude, situated in the interior of continents. Thus London enjoys a milder winter and a cooler summer than Paris, which is 2° 42′ of latitude farther south. In the northern hemisphere a country is rendered hotter by having a large tract of land to the south and sea to the north, but cooler when these relations are reversed. 5. Other important elements of climate, such as the **prevalence of particular winds**, proximity to **ocean-currents**, the **annual fall of rain**, and the **direction and relative position of mountain-chains**, together with the **nature of the soil** and the **degree of cultivation** to which it has been subjected, have for the most part been treated of in previous sections of this work, and need not here be resumed.

Isothermal Lines and Climatic Zones.—As the temperature of any given place depends on a multitude of causes besides latitude, it is obvious that the old designations of *torrid*, *temperate*, and *frigid zones*, bounded by the tropics and the polar circles, do not adequately express the temperature, and far less the general climatic character, of the different parts of the earth's surface. Humboldt and others have accordingly substituted other lines, instead of the parallels, as the true boundaries of climatic zones—viz., *Isothermal*, *Isocheimenal*, and *Isotheral lines*. The mean annual temperature of any given place may be readily ascertained by means of the thermometer; and imaginary lines connecting together all the places in the same hemisphere, having the same *mean annual temperature*, are called Isotherms. The Isocheimenals are similar lines connecting places that have the *same winter temperature*, and the Isotheral lines are those drawn between places having the *same summer temperature*. These lines of equal temperature approximate, more or less, to the direction of the equator, though they are nowhere parallel to it. They diverge from it more in the northern than in the southern hemisphere, and greatly more in high than in low latitudes. The hottest portion of the earth's surface is an oval-shaped tract in East Africa, extending from Lake Tchad to Mecca and the Strait of Babelmandeb, having a mean annual temperature of 81°; and the *coldest*, so far as yet ascertained, is a long narrow belt in the Arctic Ocean, midway between Behring Strait and the North Pole, and extending from Melville Island, in the direction of New Siberia, with an average temperature of 0° Fahr. It appears, therefore, that the hottest region is not under the equator, nor the coldest under the pole; and that all the lines of equal temperature in the northern hemisphere attain their highest latitude in the eastern side of the Atlantic Ocean—owing, no doubt, to the high temperature of the Gulf Stream, which flows northward along the western shores of Europe. By means of these Isotherms each hemisphere is divided by the meteorologist into six climatic zones, named respectively the *hot* or equatorial, the *warm*, *mild*, *cool*, *cold*, and *frigid* or polar zone.

The **Equatorial Zone** extends on both sides of the equator, is bounded by the isotherms of 77°, and embraces Central America, the West India Islands, a portion of South America, all Africa between the Atlas chain and the 15th degree of S. latitude, and the north of Australia. The

Warm Zone is bounded on the south by the equatorial zone, and on the north by the isotherm of 59°, which, in the New World, passes through San Francisco and Cape Hatteras; and, in the Old World, through the north of Spain, Rome, Gallipoli, the north of Asia Minor, the south of the Caspian, Lake Koko-Nor, the mouth of the Hoang-Ho, and the capital of Japan. The **Mild Zone** is bounded on the south by the warm zone, and on the north by the isotherm of 41°, which passes through the Aleutian Islands, Sitka, a little south of Lake Superior, through the centre of Nova Scotia; and, in the Old World, through Bergen, Christiania, Stockholm, Riga, Moscow, and Orenburg. The **Cool Zone** is bounded on the north by the isotherm of 32°; which, in the New World, passes Cape Romanzoff, Cumberland House, and the southern extremity of James Bay, south of Nain in Labrador, and north of Cape Farewell in Greenland; and, in the Old World, through the north of Iceland, Hammerfest, head of the Gulf of Bothnia, Archangel, Tobolsk, and to the south of Lake Baikal. The **Cold Zone** is bounded on the north by the isotherm of 5°, which passes through the centre of the North American Archipelago, north of Greenland, and through the extreme north of Siberia. And, lastly, the **Polar Zone**, whose southern limit is the isotherm of 5°, embraces all the remainder of the Arctic regions.

Table of Mean Temperatures.—In order to illustrate this subject more fully, we subjoin a table of the mean *annual*, mean *winter*, and mean *summer* temperature of a number of the most important cities in the world.

Cities.	Lat.	Mean annual temp.	Mean—Dec. Jan. Feb.	Mean—June, July, Aug.
London, ...	51° 32′N.	50°.1	37°.3	63°.8
Edinburgh, . . .	55° 57′	47.2	37.9	57.6
Dublin, ...	53° 21′	50.1	41.9	59.8
Paris, ...	48° 50′	51.5	38.2	64.9
Marseilles, . . .	43° 17′	57.	45.	72.0
Lisbon, ...	38° 41′	61.4	52.5	70.94
Madrid, ...	40° 25′	57.9	42.	74.5
Gibraltar, . . .	36° 8′	64.5	55.3	73.8
Rome, ...	41° 54′	59.5	45.2	74.2
Constantinople, . .	41°	56.3	40.	72.
Brussels, ...	50° 52′	50.4	37.4	64.
Vienna, ...	48° 13′	50.	31.5	68.
Berlin, ...	52° 31′	48.3	33.6	64.2
Copenhagen, . . .	55° 40′	46.56	31.31	62.7
Stockholm, . . .	59° 17′	42.27	26.04	60.43
St Petersburg, . .	59° 58′	38.7	17.2	60.8
Moscow, ...	53° 42′	39.6	14.7	64.9
Yakutsk, ...	61° 58′	13.9	36.7	58.7
Pekin, ...	39° 53′	54.8	26.7	81.1
Canton, ...	23° 12′	70.4	53.3	84.
Singapore, . . .	1° 15′	80.8	79.4	91.4
Calcutta, ...	22° 36′	90.	72.25	86.72

Cities.	Lat.	Mean annual temp.	Mean— Dec. Jan. Feb.	Mean— June, July, Aug.
Madras, ...	13° 5′	82°.9	77°.2	86°.7
Bombay, ...	18° 57′	81.27	77.44	82.84
Cabool, ...	34° 53′	68.	41.	83.
Jerusalem, . . .	31° 47′	63.4	48.6	74.7
Cairo, ...	30° 3′	72.2	58.52	85.1
Tunis, ...	36° 46′	68.7	55.76	83.
Sierra Leone, . .	8° 29′	79.	79.	77.
Timbuctoo, . . .	17° 48′	79.	68.	83.
Melville I., . . .	75° 40′	1.24	—28.45	37.08
Nain, ...	56° 25′	27.82	3.66	47.9
Montreal, ...	45° 31′	45.8	17.8	71.4
Halifax, ...	44° 38′	42.9	23.6	62.3
New York, . . .	41° 6′	51.7	31.4	72.3
New Orleans, . .	30°	69.8	55.8	82.04
Mexico, ...	19° 25′	60.6	53.64	65.23
Havannah, . . .	23° 10′	77.9	82.4	73.
Mozambique, . .	15° 2′ S	78.	79.	78.
Cape Town, . . .	34° 56′	64.7	70.	58.3
Quito, ...	0° 13′	73.31	77.6	59.71
Rio de Janeiro, . .	22° 57′	74.1	78.2	69.2
Melbourne, . . .	37° 49′	57.6	65.2	49.
Sydney, ...	33° 54′	62.7	69.6	54.
Auckland, ...	36° 52′	60.3	68.7	53.3

6. MINERALOGY.—The sixty-five constituent elements forming the earth's crust are, in general, characterised by a strong affinity for each other, disposing them to form compound bodies, each of which possesses properties widely different from those of its constituents. These compounds are termed *minerals*, and the science which treats of their forms, composition, and other properties, is called Mineralogy.

Number of Minerals.—The number of mineral species at present recognised by science somewhat exceeds five hundred, many of them having, in addition, a great number of varieties. The mineral species, however, found on our globe, is exceedingly small when compared with the vast number of species in the animal and vegetable kingdoms. All the species above named have been arranged by mineralogists into seven orders and thirty-seven families. These orders, with their respective families, are as follows:—*Oxidised Stones*, comprising 12 families—quartz, felspar, scapolite, haloid stones, leucite, zeolites, mica, hornblende, clays, garnet, gems, and metallic stones. 2. *Saline Stones*, 5 families—calc-spar, fluor-spar, heavy-spar, gypsum, rock-salt. 3. *Saline Ores*, 3 families—sparry iron ores, copper salts, lead salts. 4. *Oxidised Stones*, 5 families—iron ores, tin-stone, manganese ores, red copper ores, white antimony ores. 5. *Native Metals*, forming only one family. 6. *Sulphuretted*

Metals, 6 families—iron pyrites, galena, grey antimony ore, grey copper ore, blende, ruby blende. 7. *Inflammables*, 5 families—sulphur, diamond, coal, mineral resins, inflammable salts.

Forms of Minerals.—Mineral substances occur in nature in two distinct modes of aggregation—amorphous and crystallised. When the particles of the mineral are merely collected together, without exhibiting any regularity of structure, it is called *amorphous;* but should the mineral possess a definite chemical composition, together with a regular symmetrical external form, it is said to be *crystallised.* Generally speaking, every mineral substance, whether simple or compound, is found in nature with a form peculiar to itself, and that readily distinguishes it from all other minerals. Many of them, moreover, exist in various allied forms, and hence the number of natural crystals is enormous. Mineralogists, however, have succeeded in arranging them all under *six systems* of crystallisation, to each of which belongs a number of forms having some properties in common. In every crystal there are found three axes, which intersect at its centre and pass through from side to side. The entire classification of crystals depends on the relative lengths and position of these axes. 1. The first system is named the *Regular* or *Tesseral System* (from *tessera*, a cube), and is characterised by three equal axes intersecting each other at right angles. It includes the cube, the regular octohedron, the rhombic dodecahedron, and the regular tetrahedron. Some of the best-known minerals that assume one or other of these forms are common salt, alum, fluor-spar, iron pyrites, grey copper ore, and boracite. 2. The *Quadratic* or *Tetragonal System*, with three axes at right angles, but one shorter or longer than the other two. Eight principal forms, with numerous varieties, belong to this system, among which are included the first and second right square prisms, and the first and second right square octohedra; examples—zircon, stannic oxide, and yellow prussiate of potash. 3. The *Hexagonal* or *Rhombohedral System*, with four axes, three of which are equal, intersecting each other in one plane at 60°, and one principal axis at right angles to them. It embraces the regular six-sided prism, the regular six-sided pyramid, and the rhombohedron. Rock-crystal, calc-spar, beryl, corundum, graphite, and many other minerals, assume forms belonging to this system. 4. The *Rhombic System*, characterised by three axes, all unequal, but at right angles to each other: its principal forms are the right octohedron with rhombic base, and the right rhombic prism. This system comprises only a few varieties of form essentially distinct, but embraces nitre, native sulphur, topaz, and arragonite. 5. The *Monoclinic* or *Monoclinohedric System*, having three unequal axes, two of which intersect each other at an oblique angle, and are cut by the third at right angles. The forms peculiar to this system—among which is the oblique rhombic octohedron—approach very near to those of the rhombic, but the inclination of the axes enables us readily to distinguish them. As examples of the numerous minerals assuming one or other of its forms may be mentioned sulphur deposited from fusion, sodium carbonate, and borax. 6. The *Triclinic* or *Triclino-*

hedric, with three axes, all unequal and all oblique. This is the least regular of all the systems, and departs the most widely from symmetry of form. The doubly-oblique octohedron and the doubly-oblique prism are the leading forms; examples—copper sulphate, boracic acid, and albite.

7. GEOLOGY.—Minerals aggregated together, so as to form large masses, are technically called *rocks*. These rocks, according to their structure, are of two kinds: either they consist of minute particles of one and the same mineral, or of two, three, or more different minerals aggregated together. The former are called *simple*, the latter *mixed rocks*. Thus, for instance, *marble*, consisting of nothing but grains of carbonate of lime, is a simple rock; while *granite*, on the contrary, which is made up of small crystals of quartz, felspar, and mica, is a mixed rock. The component parts of a rock are either crystallised together, or united by a non-crystalline cement, in the same manner as mortar binds the stones of a wall. In many rocks the cohesion is very great, as for instance in greenstone; while in others it is but slight, as in sandstone, gravel, coal, &c. As compared with the vast variety of minerals, the number of distinct rocks is exceedingly small. They are also pretty uniformly distributed over the globe, while none of them is peculiar to any particular country. Thus, while the plants and animals of tropical regions differ exceedingly from those of the frigid zone, the materials which form the mountain-ranges, as well as the pebbles along the sea-shore, are everywhere the same. Notwithstanding, however, this general uniformity, there is considerable local variety, depending on the geological character of the place. Thus a traveller setting out from London, either to Berwick or Land's End, will find the character of the rocks continually varying as he proceeds from county to county; and before he arrives at his destination, he will have passed in review almost every variety of rock in the geological scale. In like manner, when a considerable *section* of the earth's crust is exposed to view—as in sea-cliffs, quarries, mines, and railway cuttings—a great variety of rocks is discernible; but they may be all reduced to two principal kinds. They are either arranged in beds or layers, and hence known as *stratified rocks;* or they are found in shapeless, indeterminate masses, destitute of any such arrangement, and therefore called *unstratified*.

Unstratified Rocks.—The unstratified rocks are also termed *igneous*, being regarded as having been formed by the agency of fire, at a time when the temperature of the earth's crust was immeasurably higher than at present. Most geologists are of opinion that our planet was in an incandescent state in the earlier stages of its exist-

ence, just as the sun and fixed stars are by some supposed to be at the present day. In the course of ages, according to this hypothesis, the exterior portion gradually cooled down, and the materials of which it consisted, previously in a molten state, came by degrees to assume the consolidated form which the crust of the earth now presents, while the interior still retains its former intense heat. Whatever view we may form of this hypothesis, there can be no doubt of the fact, that the lower we penetrate into the bowels of the earth the temperature gradually increases. A thermometer placed in any locality, only 3 feet below the surface of the earth, no longer indicates the changes of the daily temperature, but merely those of the year. Again, at a depth of 55 feet, it indicates everywhere and at all times the same temperature, which is neither affected by the hottest summer nor by the coldest winter. Below this depth, it has been found that a rise of 1 degree of Fahr. takes place for every 50 or 55 feet of descent.* Calculating at this rate of increase, a temperature of 2400° Fahr. would be reached at a depth of 25 miles, sufficient to keep in fusion such rocks as basalt, greenstone, and porphyry; at a depth of 36 miles the temperature would be 3272°, sufficient to melt iron; and at a depth of 54 miles, a heat of 4892° would prevail—a temperature at which all known substances would pass into the liquid or molten form. The phenomena of hot springs, volcanoes, and earthquakes, afford other and independent evidence of the intense heat prevailing in the interior of our planet. The igneous rocks have everywhere the appearance of having existed at a former period in a molten state; and the numerous varieties of beautiful crystals found associated with them are a striking testimony of their having cooled down with great slowness and regularity. Generally speaking, they occupy a lower position in the crust than the aqueous; though they are often seen overlying the latter, or separating the strata of which they consist, or forcing their way through those strata in veins, rents, and fissures. They are usually divided into three principal kinds—*granitic*, *trappean*, and *volcanic*. The first of these is reckoned the oldest, as it is generally found underlying or associated with the oldest series of the stratified rocks; the second is considered more recent in its origin, because occurring for the most part among the secondary and tertiary formations; and the third, as the newest of all, being generally found associated with those modern formations which have been deposited since the ter-

* "It follows from this important result that heat must be constantly passing from the interior of the earth to its surface, whence it escapes into space; and hence the temperature of the whole earth must be cooling from year to year. Sir W. Thomson of Glasgow has calculated that during the last 96,000,000 years, the rate of increase of temperature under ground has diminished from 1° for every 10 feet, to 1° for every 50 feet, of descent, as at present; and adds, that if this action had been going on with any approach to uniformity for 20,000,000,000 years, the amount of heat lost out of the earth would be more than enough to melt a mass of surface-rock equal in bulk to the whole earth, and in 200,000,000 years it would be enough to melt the rocks forming the earth's crust. If this reasoning be just, geologists cannot claim a much higher antiquity for life on the globe than 100,000,000 years."—Buchan's Meteorology, 2d edit., p. 118.

tiary era. The following are the principal rocks belonging to these three varieties, beginning with the lowest :—

GRANITIC: Common granite (consisting of small regular crystals of quartz, felspar, and mica), porphyry or porphyritic granite, syenite, protogine, pegmatite, hornblende rock, primitive greenstone, serpentine, felspathic rock, &c.

TRAPPEAN: Basalt, greenstone or dolerite, clinkstone, compact felspar, hornstone, pitchstone, claystone, amygdaloid, trap-tuff, &c.

VOLCANIC: Lava, trachyte, obsidian, pumice, pearlstone, tufa, scoriæ, palagonite, sulphur, &c.

Igneous rocks are very widely distributed, and play a most important part in the physical aspect of many countries. The mightiest mountain-ranges on the earth's surface are mainly formed of the granitic series, as the Alps, Pyrenees, Ural, and Grampian Mountains in Europe; the Himalayas in Asia; the Abyssinian Mountains in Africa; and the Andes in South America. The prevailing scenery is dreary and monotonous, and the soil barren and inhospitable. But the economic uses of granitic rocks are numerous and varied. They form exceedingly durable building-stones, admirably fitted for bridges, lighthouses, docks, fortresses, and as road and street materials. When polished they are generally highly ornamental, and are therefore employed for obelisks, tombstones, and pillars. The industrial products of the trap-rocks are also numerous, though not of equal importance. Some basalts and greenstones make good building-stone, but the difficulty of dressing them into the required shape prevents their extensive use. Nearly all the sulphur of commerce is derived from volcanic regions; pumice has long been used as a polishing or rubbing stone; while many of the lavas yield precious stones, and others are metalliferous.

STRATIFIED ROCKS.—These are divided by geologists into two great series—the Crystalline or Non-fossiliferous, and the Fossiliferous. The former,—also called Metamorphic rocks,—are usually found immediately above the granitic, separating them from the fossiliferous strata above, and embrace the following members—viz., gneiss, mica-slate, clay-slate, hornblende-slate, talc-slate, actynolite-slate, chlorite-slate, quartz-rock, and primary limestone. Although gneiss usually occupies the lowest place in the series, these rocks do not follow any invariable order, and not unfrequently one or more of them is wanting. The materials of these strata appear to have been originally deposited by water in the form of sediment, and to have been subsequently so altered by subterranean heat as to assume their present crystalline texture. At the time of their original formation they were probably replete with organic remains similar to the fossiliferous systems above them; but the intense heat pro-

ceeding from the underlying granite has destroyed every vestige of organic matter. In regions where the Metamorphic rocks lie near the surface, the scenery is usually bold, rugged, and picturesque, and the soil unproductive; but slate, marble, and building-stone are obtained in them, and not unfrequently tin, copper, lead, silver, and gold.

Fossiliferous Strata — **Palæontology.** — By carefully studying the fossiliferous strata above mentioned, we obtain most important information regarding the earliest stages of the earth's existence—information, in fact, nowhere else to be found. We learn, for example, that our world had arrived at a hoary antiquity before the creation of man; that it was not then a barren, untenanted wilderness, but the happy home of innumerable races of living creatures, which, once and again, were swept away by great natural catastrophes, and replaced by other orders of plants and animals, higher in the scale of being than their predecessors, and more nearly approximating in beauty of form and utility to the many races, animal and vegetable, which are now placed under man's domain. This knowledge is partly derived from the lithological character and immense depth of these strata, each of which, in its turn, must have been slowly deposited by the waters of seas, lakes, or rivers; but principally from the countless petrified remains of the animals and plants that had their abode in the waters or on the land, at the period of their formation. The branch of geology which treats of these organic remains is termed Palæontology (from *palaios*, ancient, *onta*, beings, and *logos*, a description), signifying a description of ancient beings. The long-continued study of the fossiliferous strata of many countries has enabled geologists to arrange the entire series into ten distinct and well-defined *systems*, each of which differs essentially from all the others, both as regards its lithological constituents and its petrified organisms. These ten systems are further grouped into three great *series*, or *periods*—viz., the Palæozoic, or most ancient; the Mesozoic, or secondary; and the Cainozoic, or most recent. The diagram (p. 51) indicates at a glance the precise place in the geological scale where each higher order of organised existence made its first appearance.

1. **The Laurentian System.**—This, the most ancient of all known fossiliferous deposits, derives its name from the river St Lawrence, in the basin of which it occupies an immense area. Sir W. Logan, of the Canadian Geological Survey, regards these rocks as the most ancient on the American continent, and as the equivalents of the oldest gneiss of Scotland and Scandinavia. In the geological scale they occupy a lower position than the Cambrian rocks of North Wales, and consist of highly crystalline gneissoid and horn-

blendic schists, which, in some localities, attain a thickness of 30,000 feet. Principal Dawson, the eminent Canadian geologist, has recently (1868) detected in the lower formation of these rocks what may justly be regarded as the earliest indication of animal life on our globe. This consists of a foraminifer, named by him *Eozoön Canadense*, a humble ZOOPHYTE, and one of the very lowest types of the animal kingdom. This zoophyte has since been detected in Bohemia, in strata underlying the Silurian rocks.

2. The Cambrian System.—(From *Cambria*, the ancient name of Wales), a term employed by Professor Sedgwick to designate the lowest fossiliferous rocks in North Wales. They consist mainly of slaty, gritty, and silicious beds of immense thickness (from 20,000 to 30,000 feet), which are regarded as the geological equivalents of the fossiliferous schists of Wicklow, the lower greywacke of Dumfries, the Northern Highlands of Scotland, the alum-schists of Sweden, and the Huronian sandstone of America. A deeper interest attaches to the Cambrian and Laurentian systems than to any other in the geological scale, on account of their containing the petrified remains of the earliest living inhabitants of our planet. These consist of FUCOIDS, a humble genus of marine plants; of Zoophytes (Oldhamia), and Graptolites, the lowest forms of animal life; of brachyopodous MOLLUSCS (lingula and terebratula); and of Trilobites (olenus and paradoxides), a remarkable family of CRUSTACEANS peculiar to the Palæozoic period.

3. The Silurian System, so called on account of its huge development in South-Eastern Wales, a locality once inhabited by the *Silures*, an ancient British tribe. Here it amounts to about 8000 feet in thickness, forming several distinct formations, which differ essentially in the character of their organic remains. The prodigious development of fossils has no parallel in the underlying formations. In the British Isles alone, in 1867, the Silurian strata contained 1194 recognised species, only 8 of which were plants. In a small tract around Prague in Bohemia, the indefatigable M. Barrande enumerates no fewer than 2735 species; while Dr Bigsby, in his 'Thesaurus Siluricus,' a work of immense industry and research, enumerates 7553 well-defined species as belonging to all countries. By inspecting this great work it will be perceived that in the Silurian age of the world's history all the classes of the invertebrate division of the animal kingdom are well represented, but that Molluscs, Echinodermata, and especially Trilobites, existed in vast numbers. But what imparts the deepest interest to the Silurian system is that it affords the earliest evidence both of vertebrated animals and of land-plants. These occur in the uppermost strata of the Ludlow rocks, and immediately underlying the lowest beds of the Devonian system. The vertebrata consist of FISHES of the genus *Pteraspis*. They are few in number (11 species only having yet been found in British rocks), small in size, and of the lowest order. They are all cartilaginous fishes, like the skate and dog-fish—for fishes with ossified vertebræ are not found till we arrive at the Devonian strata. The land-plants are also of the humblest rank, belonging to the family

Lycopodiaceæ, and allied to our present club-mosses. Very recently fishes have also been detected in the Lower Silurian formation. Silurian strata are extensively developed in many countries, especially in Wales, the South of Scotland, Bohemia, Russia, Scandinavia, North and South America, and Australia. The veins that traverse the system are usually metalliferous, yielding mercury, copper, lead, silver, and gold. It is mainly from rocks belonging to this system that the prodigious quantities of gold recently brought to light in Australia, California, the Ural Mountains, and other localities, have been obtained. They also yield flagstones, roofing-slates, and limestone for mortar and manure. In Silurian districts, the scenery is usually varied and picturesque, less abrupt and bold than in Metamorphic regions, yet more diversified by hill and dale than Secondary strata; but in Russia, south of the G. of Finland, they form wide level plains, or low plateaux. Sir Roderick Impey Murchison, the Prince of British geologists, has been the chief investigator of the Silurian system.

4. **The Devonian or Old Red Sandstone System** overlies the Silurian, separating it from the Carboniferous system. Geologists are far from being at one as to the number of formations into which it is divisible; but Hugh Miller, its most illustrious explorer, divides it into three—Lower, Middle, and Upper. It is largely developed in Scotland, South Wales, Devonshire, Belgium, Russia, and North America, where it usually consists of a succession of sandstones, alternating with layers of sandy shale and beds of concretionary limestones. The flora of the system consists partly of marine, but chiefly of land plants, of a greatly higher order than those found in the uppermost beds of the Silurian. Upwards of ten years ago, the author of this Manual discovered several huge calamites in the lowermost strata of the Old Red Sandstone of Aberdeenshire, previously regarded as unfossiliferous. Cone-bearing trees—plants as high in the scale of nature as the pines and cedars of the present day—were found by Miller, long previously, in the same formation at Cromarty; while Dr Dawson has recently discovered no fewer than eighty-two species of land-plants in the Devonian strata of Nova Scotia. To such an extent, indeed, did land-plants abound in the Devonian age, that in some localities, as at Point Gaspè, in Canada, thin seams of bituminous coal have been discovered. Perhaps the most beautiful species of the Devonian flora was the *Adiantites Hibernicus*, a tree-fern, obtained from the yellow sandstone series of Ireland and Roxburghshire. The fauna of the system displays an equal development; for though the Trilobites, which so pre-eminently characterised the Silurian system, have passed their meridian, other crustaceans of a still higher order appear in their room. The most remarkable of these is the *Pterygotus Anglicus*, a gigantic lobster-like crustacean, from 4 to 6 feet long, found in the Devonian rocks of Hereford, Forfar, and Ulbster in Caithness. A few *placoid* fishes were found in the Silurian system, but here fishes exist in vast numbers and of two distinct orders—Placoids and GANOIDS—the latter with osseous vertebræ and dermal skeletons. Among the most characteristic forms are *Onchus*, *Cephalaspis*, *Coccosteus*, *Asterolepis*, *Dipterus*, and *Holop-*

tychius. INSECTS make their first appearance here, but the reptilian remains of Elgin, formerly supposed to belong to this system, are now assigned to the Trias. In 1856, the total number of fossil species belonging to British Devonian rocks amounted to only 300; but the number has since been greatly increased. In the Rhenish and Belgian rocks alone, 450 species have been discovered; while the total number of species known in 1867 was 532. The minerals of the system are mainly building-stone of inferior colour and durability, paving-slabs of excellent quality, which are extensively exported from Caithness and Forfarshire; while to the trap-rocks of the system the lapidary is indebted for his agates, jaspers, and Scotch pebbles. The scenery is generally flat and tame, though occasionally highly diversified; and the soil, owing to its porousness, is usually well adapted for agriculture.

5. **The Carboniferous System**, so called from the profusion of vegetable matter (*carbon*) which it contains, consists in like manner of three formations — the Lower Coal-Measures or Carboniferous Slates, the Mountain Limestone, and the Upper or true Coal-Measures. Not unfrequently one of the members is wanting, and sometimes beds of one formation alternate with those of another. In some parts of Scotland the Lower Coal-Measures yield great quantities of serviceable coal; while in Ireland, where the formation is so enormously developed, little coal is found. Wherever this formation exists, it presents indications of having been deposited in fresh water, in estuaries, or in inland seas. The Mountain Limestone, again, is essentially a marine deposit, and, by the peculiar character of its fossils, forms the most easily recognised formation in the earth's crust. The Upper Coal-Measures, like the Lower, are mainly of lacustrine origin, and consist of alternations of sandstone, coal, shale, ironstone, clay, and impure limestone. The minerals of this formation, especially its coal and iron, form an inexhaustible source of wealth to those countries where, as in Britain, they most extensively prevail. In Britain, especially, they mightily contribute to our power and eminence amongst neighbouring nations. The flora of the system is the most abundant and gigantic that ever appeared on the earth's surface—consisting of coniferous trees of immense size, huge palms, tree-ferns, lepidodendra, calamites, sigillariæ, equiseta, club-mosses, and other allied forms. Wherever any of the Carboniferous formations occurs, these crowd every bed of shale, and form the materials of which every seam of coal consists. Considering, then, that the Coal-Measures exist in numerous lands and in all latitudes, and that these plants all belong to a tropical vegetation, the obvious inference is, that during the deposition of the Carboniferous strata a hot moist climate prevailed over the entire surface of the globe. The fauna is less peculiar than the flora, but it equally marks distinct progress in organic development. Here sauroid fishes, and REPTILES of the Batrachian or lowest order, appear for the first time.* The number of plants hitherto discovered in the whole sys-

* While these sheets are passing through the press, there is a report in the newspapers that Mr T. P. Barcas of Newcastle has detected, in the Northumber-

tem amounts fully to 1700, of which about one-tenth are phanerogamous. In British strata alone, the fauna, in 1867, numbered 1100 species. Carboniferous strata cover large portions of the British Isles. In England they extend from Derby to Berwick, but the Upper Coal-Measures are chiefly confined to South Wales and the valley of the Tyne. In Scotland they form a broad belt across the country from the coast of Ayrshire to Fife. Ireland is not rich in coal, all her coal-fields being situated in the Carboniferous limestone, which covers the central plain. On the Continent the principal localities are the north of France, Belgium, Germany, Prussia, Austria, and the south of Russia. In extra-European countries (for which see under the different continents) the main localities are, Hindostan, the coasts of Chili and Peru, the Isthmus of Panamá, Nova Scotia, and especially the United States of America, where the Coal-Measures occupy an area of 600,000 square miles. The economic importance of the Carboniferous system cannot be overrated. It furnishes nearly all the coal consumed in every civilised country. In the British Isles alone about 100,000,000 tons of this valuable mineral is dug annually. Almost equally important is the iron, which is usually associated with the coal. Other products of the system are, petroleum, asphalt, naphtha, paraffine-oil copperas, ochre, alum; the ores of lead, zinc, and antimony; marble, limestone, and building-stone of the finest quality. The scenery, with the exception of some limestone districts, is generally tame and unpicturesque, while the soil is often cold and only moderately fertile.

6. **The Permian System**, so named from its enormous development in the government of Perm, in Russia, forms the uppermost member of the great Palæozoic series of rocks. It was formerly known as the Saliferous or New Red Sandstone, in opposition to the Devonian or Old Red, from which it is separated by the Carboniferous system. It consists of two formations in England—Red Sandstone and Magnesian Limestone—but of three in Central Russia. The organic remains are neither numerous nor very remarkable, but approximate far more closely to those of the Carboniferous system below, than to those of the overlying Triassic. The flora, consisting of land and marine plants, amounts to 183 species, embracing fucoids, calamites, coniferous trees, and silicified trunks of tree-ferns. The fauna amounts to 350 fossil species, including 53 fishes. The Trilobites and other higher forms of crustacean life have disappeared. In common with the other Palæozoic systems, the fishes are all characterised by *heterocercal* or unequally-lobed tails; whereas in all the systems above the Permian the *homocercal* or equally-lobed tail predominates—a form which is nearly universal in the 8000 species now existing. Reptiles are more numerous than in the Carboniferous system, and now embrace SAURIANS as well as Batrachians—*e.g.*, the *palæosaurus*, *protorosaurus*, and *thecodontosaurus*, all of which are true air-breathing and land-inhabiting reptiles. The minerals

land Coal-Measures, the jaw of a true mammal! The effect of this discovery, if confirmed, will be to carry back the mammalian life of the globe for countless ages.

embrace excellent building-stones, limestone, gypsum, lithographic stone, and copper, and occasionally veins of galena and sulphuret of zinc. Permian strata are known to prevail in the north and midland counties of England, in the whole of eastern Russia, and over considerable areas in Ireland, France, Germany, and America. The physical aspect of Permian districts is by no means destitute of beauty and variety, though the scenery is sometimes tame and uninviting, and the soil well adapted for pasture and woodland.

7. **The Triassic System** derives its name from the fact that in Germany, where the system is highly developed, it consists of *three* well-defined formations—the *Bunter Sandstein*, the *Muschelkalk*, and the *Keuper*—the middle formation being wanting in England. With these formations we commence, on our upward march, the second great division of the fossiliferous strata, and hence named the MESOZOIC. At the close of the Permian system, an infinitely greater change took place in organic life than that which marked the ascent at any previous stage. All the species and most of the genera of the earlier races have now disappeared, and are replaced in the Trias by an entirely new series, the types of which are continued to the base of the Tertiary. Nature has entered on a new cycle, and everywhere the humbler forms of organic life have given place to forms more highly organised. It is to this system, and not to the Devonian, that we must now refer the remarkable reptiles, the Telerpeton, Staganolepis, and Hyperadapedon of the Elgin Sandstone. In the Trias formations on the Connecticut river, in New England, the footprints of no fewer than 23 species of BIRDS are enumerated by Dr Hitchcock, together with Chelonians, Batrachians, and other reptiles. In the Trias also occur the earliest traces of MAMMALS. In 1847, Professor Plieninger discovered in the upper beds of the Keuper formation, in Würtemberg, the molar teeth and bones of a small marsupial animal named *Microlestes antiquus*. In England, the animal remains in the Trias are not very numerous (only 61 species); but on the Continent, one single formation (the Muschelkalk) has already yielded 222 species, and the St Cassian beds 744 species. The flora embraces equisetums, calamites, ferns, cycadaceous and coniferous plants, but is very limited. In England and Ireland this system is the great repository of rock-salt, the layers of which, in Cheshire, in some places attain a thickness of from 75 to 100 feet. It also yields sandstone for building purposes, calcareous flagstones, limestones, and valuable beds of gypsum. The scenery of the Trias is usually tame and monotonous, and the soil better adapted for pastoral than agricultural purposes.

8. **The Oolitic System** is highly developed in England, where it consists of three very distinct formations—the Lias, Oolite, and Wealden—and stretches slantingly across the country from Dorsetshire to Yorkshire. It is evident from the character of the imbedded organisms that the first two are *marine* formations, while the last must have been deposited from *fresh water*. The characteristic fossils of the *Lias*—the lowest of the three—are cycadaceous plants, which occupy a middle position between ferns and coniferous trees, and

which here make their first appearance. The fauna wears a singular aspect, owing to the vast number of ammonites, belemnites, gryphæe, and cuttle-fishes which it embraces. Reptiles also attain their highest development in this formation, containing, as it does, those gigantic and highly characteristic forms, the Ichthyosaurus and Plesiosaurus. In 1864, the fossil fauna of this formation, as developed in the British Isles, contained, according to Professor Ramsay of the London University, 467 species. The flora of the *Oolite* in the same year comprised 128 species—consisting, for the most part, of cycadaceæ, ferns, equisetaceæ, and pines, with the new orders—cypresses, yews, dammaras, thujas, and screw-pines. Such, indeed, was the abundance of vegetation in the Oolitic age, that not unfrequently it exhibits seams of workable coal, as at Brora in Sutherlandshire, and Richmond in Virginia. Its fauna was peculiarly rich and varied, as is evident from the fact that in the British rocks alone no fewer than 1483 species were known to geologists in 1864. The marsupial or pouched animals, which first appeared in the Trias, now existed in great numbers. They were allied to the living opossum and kangaroo of the Australian continent, and formed a connecting link between birds and the placental or true Mammalia, which do not appear till near the end of the Wealden age. The *Wealden* derives its name from the "wealds" or "wolds" of Suffolk, because it prevails extensively in that country. Unlike the two underlying formations, the Wealden is essentially a fresh-water formation, and the only one of that nature occurring within the limits of the Mesozoic series. Its organic remains differ very widely from those of the Lias and Oolite—consisting of "the spoils of the river and the land, not of the sea." Among its most characteristic plants may be named the *sphenopteris gracilis* (a sort of fern), leaves of *coniferæ* and *cycadaceæ*, and fruits resembling those of palms. Of the numerous reptiles belonging to the formation are—the *Iguanodon*, a gigantic herbivorous animal, and the *Pterodactyl*, or flying reptile, which somewhat resembled a bat. But by far the most interesting fossils of the Wealden are found in its uppermost strata, near the base of the Cretaceous system—being the bones and teeth of PLACENTAL OR TRUE MAMMALS, which mark another stage in the great march of creation. Including the Purbeck beds, the Wealden formation of the British Isles have yielded 253 fossil species, including 23 plants, 30 fishes, and 29 reptiles. The minerals of the Oolitic system are of considerable importance, consisting of building, paving, roofing and tile stones, alum, marble, coal, and fuller's earth. Both the Lias and Oolitic limestones are largely quarried for mortar and hydraulic cement, the latter also furnishing the best description of lithographic stones. The scenery of Oolitic districts is varied and pleasing, but wants the boldness and abruptness of Metamorphic regions. The soil is usually dry and fertile, except the Lias and Wealden clays, which in dry seasons are stiff and intractable.

9. **The Cretaceous System**, the highest in the great Mesozoic series of rocks, derives its name from the chalk (Lat. *creta*) that forms the main ingredient in its composition. It is a marine deposit,

and embraces two well-defined formations—the Greensand and the Chalk. The flora is not abundant, there being only 12 species known in British rocks, and even these usually consist of drifted and imperfect fragments. They exhibit, however, a great era in the progress of terrestrial vegetation, for here first occur the remains of EXOGENOUS or DICOTYLEDONOUS TREES—*i. e.*, trees having a separable bark, distinct concentric circles, increasing at their circumference, the solidity diminishing from the centre outwards, the pith enclosed in a longitudinal canal, and possessed of medullary rays. The fauna is rich, varied, and beautifully preserved. Nearly all the types of life are strictly and peculiarly Mesozoic. "Of the 521 species known in our Upper Chalk, all, with the exception of *Terebratula caput-serpentis* and a few foraminifera, have apparently become extinct during that vast period that elapsed between the close of the Cretaceous and the beginning of the Eocene epoch in England."—(Professor Ramsay.) Of the four orders into which fishes are divided, two appear for the first time in Cretaceous rocks—viz., CTENOIDS and CYCLOIDS. Reptiles, though still the dormant class of animals, have now passed their meridian; but turtles, pterodactyles, and oviparous saurians are not unfrequent. Bones of birds have been detected in some localities, as also those of QUADRUMANOUS MAMMALS, allied to our existing monkeys. Altogether, 1362 species of fossil animals were known to exist in British rocks in 1864, of which 89 were fishes and 31 reptiles. Cretaceous strata cover extensive areas in the south of England, in France, Germany, the United States, and Vancouver Island, in all of which the scenery is distinguished by the rounded outlines of the hills and valleys, which afford excellent pasturage. The origin of the chalk-beds has led to much discussion, but it is now believed to be derived from the myriads of coralline zoophytes and foraminifera with which the seas of the period abounded. The industrial products are comparatively unimportant, consisting chiefly of preparations of chalk and flint. The former, which consists of carbonate of lime, is employed by the farmer, bricklayer, and plasterer; while the latter, when calcined, is largely used in the manufacture of flint-glass and porcelain ware.

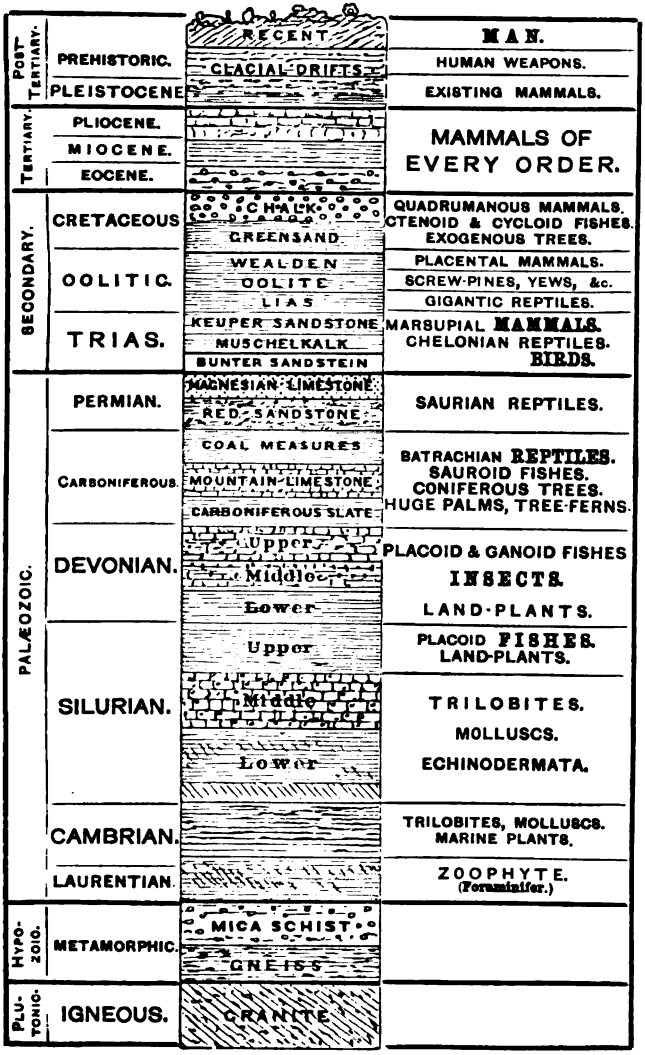
10. **The Tertiary System** embraces three formations—the Lower, Middle, and Upper—or, as they are more commonly called (with reference to the number of species which they respectively contain in common with our existing fauna), Eocene, Miocene, and Pliocene. These consist of vast and varied deposits—fluviatile, lacustrine, marine, and volcanic—usually found resting on one or other of the formations of the Cretaceous system. It appears evident that during their deposition important changes took place in the relative level of sea and land; that volcanic agency was developed on a vast and magnificent scale; that the portion of Europe now forming the British Isles was the site of enormous lakes, which at the present day have their best analogues in the vast fresh-water lakes of Canada; and that, during the same epoch, such a gradual refrigeration of climate took place in European countries as to admit of the existence of plants and animals similar to, or identical with,

those now existing in that continent. On entering the Tertiary strata the palæontologist finds that organic nature has undergone a complete change—that every plant and animal with which he became acquainted when studying the Secondary rocks has passed away, and that he has now entered on a wholly new stage of existence. Never before, during the pre-Adamic history of our earth, did so thorough and total a change take place in the flora and fauna of the globe (see under "Triassic System," p. 46). The flora is distinguished from that of the older epochs by the abundance of dicotyledonous trees (oaks, beeches, elms, &c.), a few leaves and fragments only of which have as yet been detected in the Cretaceous rocks, and even these are of wholly different species. The monocotyledons, especially palms, also become greatly more numerous; while the conifers, previously so abundant, no longer occupy a prominent place. In the Eocene formation alone, in which between 200 and 300 fossil plants have been detected, no fewer than one-half are dicotyledons. The fauna of the system is equally characteristic. It was pre-eminently the age of mammalia; for, though mammals, both marsupial and placental, are known to have existed in the Secondary ages, only a few vestiges of either occur in formations lower down than the Eocene. In this single formation—that to which the London and Paris basins belong—no fewer than 25 genera of this class of vertebrata were known in 1856. Altogether, upwards of 100 genera of mammals occur in the Tertiary rocks; and, what is still more remarkable, all the existing orders of the class are represented, though unequally. The pachydermata were especially numerous, embracing the uncouth *palæotherium, anoplotherium, deinotherium, mastodon,* and *mammoth.* It was among the pachydermata of the Paris basin that the illustrious Cuvier effected those wonderful restorations which, in the beginning of this century, gave such an impetus to palæontology. Several species of birds, chiefly from the Eocene of Paris, have been described, the most remarkable of which is the gigantic *gastornis Parisiensis,* a form intermediate between the wading and aquatic orders. The reptiles resemble the existing crocodile, alligator, and gavial. The fishes embrace the four orders—placoids, ganoids, cycloids, and ctenoids—but appear to be almost without exception of different species from those now peopling the ocean. In England, Tertiary strata cover nearly all the basin of the Thames, as also Hampshire and the northern part of the Isle of Wight, but they scarcely exist in Scotland and Ireland. For their distribution in Southern Europe see at p. 80. The industrial products are various, comprising building-stone, marble, limestone, gypsum, brick-clay, potter's clay, pipe-clay, millstones, lignite or "brown coal," and amber.

11. The Pleistocene or Boulder Clay.—It would appear that, after the deposition of the Eocene, Miocene, and Pliocene formations, a great change took place in all the higher latitudes of the northern hemisphere in regard to the relative distribution of sea and land; that a large portion of Europe and of the British Isles was gradually submerged beneath the waters, the summits of the loftier

mountain-ranges appearing as islands in mid-ocean; that a corresponding elevation of land occurred simultaneously in the Arctic regions, accompanied by a change in the direction of the great ocean-currents, and by a great diminution of temperature over all Northern Europe; that enormous icebergs—laden with gravel, sand, and gigantic boulders—were annually disengaged from the Arctic shores, which, floating southwards, discharged their miscellaneous contents over the recently-submerged lands; that this submergence and accompanying change of temperature caused the destruction of by far the greater number of the plants and animals which existed in North Europe in the Miocene and Pliocene ages—their places being supplied, however, to some extent, by the fauna and flora now peculiar to more northern latitudes; that after this state of things had continued for ages, the submerged lands of North Europe and the British Isles were again gradually elevated to their present level; and that, finally, the glacial epoch having passed away, a new flora and fauna, suited to the new conditions, made their appearance—many of the species of which continue to exist to the present day. The organic remains of the boulder clay are by no means numerous. In the British Isles they occur chiefly in the Norwich Crag, Lancashire, North Wales, Isle of Man, the banks of the Clyde, Caithness, and in the north and east of Ireland. On the Continent the main localities are Scandinavia, Russia, and North Germany; while similar deposits are found in Sicily, North America, Patagonia, and Tierra del Fuego. The Pleistocene beds contain very few recognisable remains of plants, but some of the species still exist among our aboriginal trees; as, for example, the Scotch fir and the common birch. Others continue to hold their place in the forests of North-western Europe; as *Abies excelsa*, or the Norwegian spruce, which is found rooted in the Norwich Crag. In general, the coniferæ alone appear to have flourished during the entire era of the boulder clay. The fossil fauna is more abundant, but consists for the most part of mollusca; though in the fresh-water beds numerous remains of mammals occur, the greater number of which have become extinct. The total number of marine testacea in the Norwich Crag does not exceed 76 species, of which only one-tenth are extinct; while of the 14 fresh-water species associated with them, all appear to be now living, either in the British seas, the Boreal, or the Arctic regions. No fewer than 37 species of mammals are enumerated by Professor Owen as occurring in the caves of the British Isles; and of these, he says, 18 species have become extinct, while the remaining 19 continue to survive in the British archipelago, or on the Continent. The entire fauna of the glacial beds, as given by Dr Edward Forbes in the new edition of the 'Physical Atlas,' amounts to 170 species. These are chiefly mollusca, but the number includes several birds, and not a few extinct mammals; but the horse, goat, ox, red deer, badger, fox, wild-cat, and several other species known to have existed in the Pliocene era, survived the storms of the Pleistocene, and now form a living bridge connecting the present epoch with the immeasurable ages of the past.

SUCCESSION OF LIFE.



12. Prehistoric Formation. — A deeper interest attaches to this formation than to any other in the entire geological scale. Here are found the earliest traces of the existence of MAN on the earth—as pile-dwellings, tree canoes, flint arrow-heads and other stone implements manufactured by human hands. No clear line of demarcation separates this formation from the Pleistocene, and in the present state of science it cannot be positively determined in what century or millennium those implements were fabricated. There can be little doubt, however, of the vast antiquity of some of them, as proven by Sir Charles Lyell and others. The antiquity of the human species, as thus indicated, no doubt conflicts with the chronology of Usher, founded on our modern Hebrew text. In the matter of antediluvian chronology, however, the Hebrew text has in all probability been vitiated, as we have shown at large in a separate work ('Facts and Dates,' p. 62-69). The Septuagint translation—a translation made from an uncorrupted text, and sanctioned by our Lord and His apostles—assigns to our race an antiquity of nearly 1500 years more than Usher does. Science is giving its emphatic verdict, in this particular, in favour of the Septuagint; and though the extended chronology may fail in meeting all the difficulties of the case, it will certainly meet many of them. In the mean time we cordially adopt the words of a recent brilliant writer when he says, "The theology of science is at present in its infancy, and consequently liable to multitudes of errors. When the theologian shall have become more conversant with God's works, and the scientific man more of a theologian, we shall obtain more light."—('Old Bones,' by Rev. W. S. Symonds, F.G.S.)

8. BOTANY.—Physical Geography does not concern itself with the structure and classification of plants, but confines its attention to their existing number, to the various modes by which they have been disseminated, to the external causes which affect their distribution, and to the more or less limited areas to which the different species and families are confined.

Number of Species. — The number of species presently known to botanists probably exceeds 120,000; but the progress of discovery is so rapid, and the parts of the earth's surface still uninvestigated so extensive, that 200,000 appears to be a very moderate calculation of the number of species actually existing. Theophrastus (B.C. 390) knew only 500; Pliny (A.D. 79) increased the number to 1000; the naturalists of the middle ages contented themselves with a description of 1400; the celebrated Linnæus, in 1753, swelled the number to 5938, and in 1762, to 8800; while Wildenow, in 1807, raised the number to 20,000. During the present century the progress of the science has been remarkable. In the year 1820, the number of species in the herbarium of the *Jardin des Plantes*, at Paris, was estimated at 56,000. In 1847 the collection of M. Delessert, of the same city, contained about 86,000 species. In 1844, Steudal, the German botanist, estimated the total number of known forms at 95,000; while in 1869 the number of recognised species was 120,000, of which 103,000 were flowering, and 17,000 flowerless.

Humboldt estimates the total number of existing plants as at least 200,000.

Antiquity of Species.—The geologist can demonstrate that all the species of the existing flora were not created simultaneously, but were introduced at successive stages as the surface and temperature of the earth became fitted for their reception. They are, therefore, of very different degrees of antiquity; for while they all appear to have been denizens of the earth ever since the creation of man, most of them were ushered into being prior to the time in which our existing continents acquired their present configuration; and a very few of them can be traced back to the earliest Tertiary ages. Those species are reckoned the oldest which combine simplicity of organisation with great width of distribution, as our common grasses and rushes, together with mosses, lichens, fungi, and ferns; while those that are confined to small areas—notwithstanding the contiguity of land having a suitable climate, and their being endowed with the requisite means of transport—are considered the most recent.

Centres of Creation.—Most people seem to be of opinion that all, or nearly all, the plants found in any particular locality, were originally created there. The great Swedish botanist, on the other hand, believed that the progenitors of all the existing plants were created in some one particular region, from which they were gradually disseminated over the earth's surface. Innumerable facts can be adduced by modern science to show that each of these hypotheses is equally untenable; and most naturalists are now of opinion that there were numerous *specific centres*, situated in numerous and widely-separated localities, each centre being the birthplace of one species, or assemblage of species, which continues to grow there in greater perfection than in any other region to which, by the various transporting agents known to exist, it was subsequently wafted.

Modes of Dissemination.—Many plants are possessed of means by which they can diffuse themselves over areas more or less extensive. Some have seeds with winged or feathery appendages, which enable them to float on the air; other seeds are so small as to be borne by winds to very distant localities; very many are transported by rivers, streams, marine currents, and even icebergs, to very remote regions, where, if the soil and climate be suitable, they take root and propagate their species; while not a few adhere to the hairy coatings of migratory animals, or, entering into the gizzards of birds of passage, retain their vitality after being voided by them in distant localities. The agency of man has also, in all ages, been very effectual in the dissemination of plants; for example, the passage of armies from one country to another, commerce by sea with foreign nations, the discovery of previously unknown lands, and the planting of colonies in distant regions. But all these agencies, singly or combined, cannot adequately account for the present distribution of the species, without supposing a multiplicity of original specific centres.

Areas of Distribution.—In whatever way the vegetation of the globe was originally disseminated, its present distribution is such

that the individual species are confined to particular portions of the surface characterised by a certain temperature and other climatic conditions. The area within which a given plant prevails is called its *habitation*, or *area of distribution*. In or near the centre of this area it attains its highest development; it degenerates when far removed from this centre; and when transported beyond the limits of the area it languishes and dies. Though each species of plant has a nature peculiar to itself, the soil, temperature, and climatic conditions of the various portions of the earth's surface are so various, that each species finds for itself a perfectly suitable habitation. These habitations, or areas of distribution, are of all sizes; embracing in some cases a large section of a continent, or of several continents, and being limited in others to the merest speck of land. For example, a considerable number of plants of Northern Europe occurs also in Siberia and British North America; some British species are found at high elevations on the Himalaya Mountains; and one species—the *Epilobium tetragonum*—is common to Britain, Canada, and Tierra del Fuego. On the other hand, the Cape of Good Hope, California, and certain regions of the Andes, have respectively certain species peculiar to themselves; as also Madeira, the Canaries, St Helena, the Sandwich and Society Islands, &c. The same species of plant seldom occurs in widely-separated countries, however closely the soil and climate of both may approximate; but *similar* species of the same genus are, in such circumstances, rarely absent, and these are spoken of by botanists as *representative species*. Thus the heaths of Europe are represented by other species of the genus *Erica* in S. Africa; and the violets of North America represent those of Britain, which are specifically different.

Botanical Regions.—Various attempts have been made by botanists to divide the globe into certain well-defined *regions*, founded on their characteristic vegetation. Wildenow, De Candolle, Meyen, and especially Schouw, have distinguished themselves in this department of science. The last-named naturalist, about thirty years ago, proposed to divide the earth's surface into what he calls "Phyto-geographic regions." These, according to him, are 25 in number, and characterised as follows: 1. At least one-half of the *species* found in each region must be peculiar to it. 2. One-fourth of the *genera* must be peculiar to it, or at least be more prevalent there than elsewhere. 3. Some of the *orders* must either be peculiar to it, or reach their maximum in it. Each of the different regions receives three separate designations: the *first* indicating its botanical character; the *second* its geographical position; while the *third* is named after some eminent botanist.

1. *Region of Mosses and Saxifrages*, the Arctic-Alpine flora, or Wahlenberg's region; embracing all the countries situated within the Arctic Circle, together with the higher elevations of the mountain-ranges of W. and S. Europe. 2. *Region of Umbelliferæ and Cruciferæ*, North-European and North-Asiatic, or Linnæus's region; embracing that large portion of the area of the Old World which lies between the Polar Circle and lat. 45° N., and between the Atlantic and Pacific Oceans. 3. *Region of*

Labiatæ and Caryophyllaceæ, Mediterranean flora, or De Candolle's region; embracing Southern Europe, Asia Minor, Syria, N. Africa, Madeira, Azores, and Canaries. 4. *Region of Asters and Solidagos*, Northern North-American, or Michaux's region; extending from the Atlantic to the Rocky Mountains, and from lat. 35° N. to Lake Winnipeg and St James Bay. It embraces the greater part of Canada and the N.E. part of the United States. 5. *Region of Magnolias*, the S.E. North-American flora, or Pursh's region; comprising the remainder of the United States lying E. of the Rocky Mountains. 6. *Region of Camelliaceæ and Celastraceæ*, the Chino-Japanese, or Kämpfer's region; embracing Japan, Corea, and the N.E. part of China. 7. *Region of Scitaminæ and Zingiberaceæ*, the Indian flora, or Roxburgh's region; embracing Hindustan, Further India, and the S. of China. 8. *Region of Rhododendron trees*, the Emodic, or Wallich's region; comprising the flora of the S. slopes of the Himalaya, from the altitude of 5000 to 12,000 feet. It includes Sirmur, Gurwhal, Kumaon, Nepal, and Bhotan. 9. *The Malaysian flora*, or Reinwardt's region; embracing Northern Australia and the Malay Archipelago, with the exception of Sumatra, Java, and the S. of Borneo. 10. *Javanese flora*, or Blume's region; embracing Java, Sumatra, Timor, and the S. of Borneo. 11. *Oceanic* or *Polynesian flora*, or Chamisso's region; embracing all the islands of the Pacific Ocean within the tropics. 12. *Region of Balsamic trees*, Arabian, or Forskal's region; embracing the S.W. of Arabia, the E. of Abyssinia, S. of Persia, Beluchistan, and Sindh. 13. *The Desert*, or Delile's region; comprising the Sahara, and all Arabia except the S.W. angle. 14. *Region of Tropical Africa*, or Adanson's region; embracing the whole of Africa between the Tropic of Capricorn and the 15th deg. of N. latitude, with the exception of Eastern Abyssinia. It also includes Madagascar. 15. *Region of Cactaceæ and Piperaceæ*, Mexican, or Jacquin's region; includes Mexico, Central America, New Granada, Ecuador, Peru, Venezuela, Guinea, and the N. of Brazil, with the exception of the higher elevations of the mountain-chains. 16. *Region of the Highlands of Mexico*, or Bonpland's region; those parts of Mexico and Central America which have an elevation of more than 5000 feet. 17. *Region of Cinchonæ, or medicinal herbs*, the Andes, or Humboldt's region; embracing the elevated regions of the Andes, from 5000 to 9000 feet high, and extending southward to the Tropic of Capricorn. 18. *Region of Escallonieæ and Calceolariæ*, or Ruiz and Pavon's region, embraces the highest elevations of the last-mentioned range, or above 9000 feet. 19. *The West Indian flora*, or Swartz's region; embracing all the islands of the West Indies. 20. *Region of Palms and Melastomaceæ*, Brazilian, or Martius's region; embracing all South America between the Andes and the Atlantic, and between the Tropic of Capricorn and the 15th region. 21. *Region of Arborescent Compositæ*, Extra-tropical South-American, or St Hilaire's region; embracing South America between the Tropic of Capricorn and Patagonia. 22. *Patagonian* or *Antarctic Region*, D'Urville's region; embracing Patagonia, Tierra del Fuego, and the Falkland Isles. 23. *Region of Stapeliæ and Mesembryanthema*, South African, or Thunberg's region; including the whole of Africa S. of the Tropic of Capricorn. 24. *Region of Eucalypti and Epacridaceæ*, Australian, or Brown's region; including Southern Australia and Tasmania. 25. *Region of New Zealand*, or Forster's region; embracing the islands of New Zealand.

9. ZOOLOGY.—Zoological Geography is closely allied to Botanical Geography, being that branch of the science which treats of

the habitats, limits of distribution, and dispersion of animals, as they at present exist on the globe.

Number of Animals.—The barriers in the way of obtaining accurate statistics of the number of animal species are even greater than in the case of plants; and naturalists accordingly vary greatly in their estimates, not only of the probable number presently existing, but also of the known and described species. This statement need not excite surprise when we consider that many regions of the globe remain almost wholly unknown, while others have been but imperfectly explored; that whilst the habitat of plants, when once discovered, can be visited and revisited by the botanist at pleasure, the great majority of animals are endowed with the powers of locomotion, and evade the pursuit of man; that myriads of species are too minute to be seen by the naked eye, while others are too fleet or too formidable for being accurately observed; that age and sex produce such changes in their appearance as often to render it doubtful whether or not the species are identical; that many of them have their home in the depths of the ocean, or conceal themselves in the sand on the sea-shore; while others seek shelter in the impenetrable recesses of the forest, or in inaccessible mountain-cliffs. The number of known species of vertebrated animals, according to Dr Keith Johnston's 'Physical Atlas,' published in 1856, is as follows: Mammals, 1704; birds, 6226; reptiles, 657; fishes, 8000 — total, 16,587. Wagner and Waterhouse, in 1848, gave the number of known mammals at 1967; birds, 8000; reptiles, 1600; and fishes, 8000—total, 19,567. The probable number of existing Vertebrata may therefore be estimated at about 20,000. The other divisions of the animal kingdom are far more uncertain. Thus, while Woodward, writing in 1851, gives the number of recent Mollusca at 12,000, and the fossil species at 15,000, others maintain that no fewer than 20,000 recent species are to be found in certain existing collections. Keferstein (in 1834) assigns 1000 as the number of known species of Radiata, including the polypi, entozoa, acalepha, and echinodermata; while Swainson, in 1840, gives the number at 2500. But by far the greatest discrepancy prevails in regard to the Articulata (embracing annellida, crustacea, arachnides, and insecta), some authors stating the number at 120,000, others at 400,000, and some even as high as 550,000, the great majority of which, however, are Insects. Besides these, there exist innumerable hosts of infusoria or animalcules, a class of microscopic animals belonging to the sub-kingdom Radiata, and found in countless numbers in vegetable infusions. Omitting from our reckoning the insects and infusoria, of the actual number of which we can form no probable estimate in the present state of science, the following may be taken as a tolerable approximation to the *existing number* of animals: Vertebrata, 20,000; Mollusca, 20,000; Radiata, 5000; Articulata, 5000—total, 50,000 species. M. Agassiz, one of the most eminent of modern naturalists, estimated, in 1850, the total number of *known species*, including insects, at 250,000.

Distribution of Animals.—Though animals are endowed with the power of voluntary motion, and are therefore more capable than

plants of transporting themselves from one region to another, various causes combine to limit the actual extension of individual species. Difference of climate, and the greater or less facility of procuring subsistence, are amongst the foremost of those causes; while in regard to land-animals, arms of the sea and elevated mountain-chains present formidable barriers to migration. In numerous instances, however, we can trace the operation to no secondary cause, and little can be advanced beyond conjecture as to the way and manner in which a large proportion of the species came to be located in the precise regions where they are found; unless, as in the case of plants, we assent to the doctrine of numerous *centres of creation*. In no other way can science satisfactorily resolve the question how quadrupeds, for example, and other animals incapable of crossing arms of the sea, have found their way to islands situated in mid-ocean; whilst in regions very remote from each other, but having a similar climate, the species, instead of being identical, are merely analogous.

Zoological Kingdoms.—Naturalists divide the surface of the globe into six zoological kingdoms, which are subdivided into fourteen zoological provinces. Approximately, the six kingdoms correspond respectively with the six continents of the globe—viz., Europe, Asia, Africa, North America, South America, and Oceania. North and South America are indeed usually comprised under one kingdom, thus reducing the number to five; but simplicity of arrangement, and the convenience of the student, render the other division preferable.

The first, or EUROPEAN KINGDOM, embraces the whole of insular Europe, and is subdivided into three zoological provinces—viz., *Arctic, Central*, and *Southern Europe*. The second, or ASIATIC KINGDOM, includes continental Asia, with the exception of Arabia, extends from the Urals and the Volga to the Pacific, and embraces four provinces—viz., *Arctic, Central*, and *Tropical* Asia, together with Asia Minor and Syria, which last is designated the *Transition Province*, as its fauna combines the characteristics of Asia, Europe, and Africa. The third, or AFRICAN KINGDOM, consists of but one province, which embraces the entire continent of Africa, together with Arabia, Madagascar, Bourbon, and Mauritius. The OCEANIC or AUSTRALIAN KINGDOM embraces the whole of Oceania, and is subdivided into two provinces—viz., the *Malayan*, which forms a connecting link between the Asiatic and Australian kingdoms; and the *Melanesian*, whose fauna is of a very peculiar character. The fifth, or NORTH AMERICAN KINGDOM, embraces the whole of that continent north of the Mexican States, and contains two provinces, the first of which comprehends Alaska, and British and Danish America, and the second the United States. The sixth, or SOUTH AMERICAN KINGDOM, embraces not only the whole South American continent, but also Mexico, Central America, and the West Indies. It consists of two provinces of very unequal dimensions—viz., *Tropical America*, which extends from the north of Mexico to lat. 40° S.; and *Austral America*, embracing Patagonia, Tierra del Fuego, and the Falkland Isles.*

* For fuller details regarding the limits and characteristics of these provinces, we must refer the student to the zoological sections of this work, under the six continental divisions of the globe.

The following Table,* which is adopted with modifications from Milner's 'Universal Geography,' exhibits the distribution of the several orders of Mammalia in the six zoological kingdoms :—

DISTRIBUTION OF THE MAMMALIA.

Orders of Mammalia.	Total No. of Species.		Europe.		Asia.		Africa.		North America.		Central and South America.		Oceania.	
	Phy. Atlas.	Wagner and Water.	No. of Species.	Pec. Species.	No. of Species.	Pec. Species.	No. of Species.	Pec. Species.	No. of Species.	Pec. Species.	No. of Species.	Pec. Species.	No. of Species.	Pec. Species.
Quadrumana	170	186	1	—	49	49	63	62	—	—	74	74	—	—
Carnivora .	514	731	64	20	276	224	174	151	101	88	188	180	8	8
Marsupialia .	123	140	—	—	4	4	—	—	4	3	28	27	105	105
Rodentia . .	604	604	61	21	185	126	104	94	118	113	166	161	21	19
Edentata . .	28	34	—	—	5	5	6	6	1	1	20	19	3	3
Pachydermata	39	38	1	—	17	16	18	17	—	—	4	4	—	—
Ruminantia .	151	159	14	7	67	59	65	62	13	9	13	12	—	—
Cetacea . .	75	75	24	7	29	9	16	7	24	4	25	14	13	5
Total No. of species	1704	1967	165	55	632	492	446	399	260	218	518	491	150	188

10. ETHNOGRAPHY.—Man, from the perfection and beauty of his bodily organisation, and from the order of time in which he was called into existence, occupies the apex of the vast pyramid of animal life. Of all animals he only walks erect, his eye reflecting earth and sky, and his look glancing freely over that world in the midst of which he lives and reigns. Over his whole form there is an air of more than material beauty, the reflection of a soul infinitely rich in thought and emotion; while by possessing an immortal spirit he is raised immeasurably above material things, and separated, as by an impassable gulf, from all other animals. In common with these, he is, to some extent, subject to the influence of external circumstances, though in a less degree than any other species. His superior intelligence, and the pliancy of his constitution, fit him to become the denizen of all countries, and all varieties of climate, from the scorching heat of the tropics to the rigorous cold of Arctic latitudes. His geographical distribution, accordingly, differs from that of all other organic beings, and man is the only

* The *first* column of figures shows the total number of species belonging to each order, according to Johnston's 'Physical Atlas;' the *second*, the total number, according to Wagner and Waterhouse, on whose statistics the whole remainder of the table is based; while the second division of the other columns shows the number of species that are peculiar to each zoological kingdom.

true cosmopolite. Of the vast number of countries brought to the knowledge of Europeans by modern discovery, very few were found uninhabited; the principal exceptions being Iceland, Spitzbergen, and Novaia Zemlia; Madeira, the Azores, and St Helena; the Falkland Isles, the Galapagos, some minor groups in Polynesia, and the inhospitable regions around the South Pole.

Unity of the Species.—Man is of only one species, and the so-called *races* of men are mere varieties of the same species, differing less from each other than do the varieties of many other animals; as, for example, the dog, the horse, the sheep, and the domestic fowl. Science and Revelation alike proclaim this fundamental truth: the one, by establishing an identity of anatomical structure between the races, the same period of gestation, the same instincts, longevity, and diseases, the same mental and moral character, and the fertility of offspring arising from intermixture of blood: and the other, by declaring that in one man was the germ of the whole human family; that the myriads of men that now people the earth, after the lapse of a hundred and fifty generations, are all *brethren*, united together by the closest ties; and that the universal depravity and death which have their root in the common ancestor of all, are more than counterbalanced by the obedience and sufferings of his glorious Descendant, whom every human being can claim as his near kinsman.

Origin of Races.—Yet in all ages and countries the individuals of the human family have presented numberless diversities of appearance; and though all are specifically identical, every member of the family exhibits his own proper *individuality*—that is to say, certain characteristics of physical organisation and of mental disposition that distinguish him from every other individual of the species. For Man is a complex being, and embraces within him a world of diverse elements, that rival, in their various riches, the world of external nature. These elements are capable of combination in infinitely varied proportions. In one the soul predominates, in another the body; here the nervous system bears rule, there the arterial; here the affections, there the understanding. The laws and the causes, however, that determine these combinations, are to us a secret; for individuality is a mystery of life, the stamp of the Creator. This much, however, seems certain,—viz., that while the distinctive character of the soul never fails to manifest itself very perceptibly in the entire physical organisation—especially in the form of the head and in the physiognomy—the influence of external nature, of the family, of society, of habit, and of education, is but of secondary importance, tending merely to modify the original individuality. Yet, by a constant and unvarying repetition, carried on through a long series of generations, even the latter influences may produce very important effects; though never to the extent of eradicating the outlines of this individuality, which, notwithstanding the constant intermingling of blood by marriage, perpetuates itself for ages

from father to son, in the same family, every member of which resembles, both in temperament and physical organisation, some one or other of his ancestors or blood relations. Accordingly we find that, from the earliest dawn of history, mankind has been divided into races,* and organised into nations; and it is one of the first lessons of Revelation that with this division human design and human choice had nothing whatever to do,—that it was exclusively the work of the Creator, with nature to aid in its accomplishment,—and that these races and nations were distributed over the earth's surface according to a definite plan, in which each had assigned to it its proper part in the progress of events. Each region, moreover, strengthened and modified the character of the race that was conducted into it; and thus national characteristics, which become more and more marked as generations succeeded each other, attained at length such a degree of fixedness and inflexibility as has enabled them to traverse the ages of history, and encounter the most opposite influences, without undergoing any radical change.

Dispersion of Nations.—The precise locality in which the dispersion of nations originated, and the precise date at which it took place, are not easily determined; but there can be no doubt that we must look for the former to Western Asia, and for the latter to the fifth generation after the Deluge.† Asiatic Turkey, situated in the centre of the Old World, and midway between its four great oceans, has been twice the cradle of mankind, and still remains the region in which the human form attains its highest perfection. Here Noah with his family, the sole survivor of that great catastrophe which swept away the inhabitants of the antediluvian world, took up his destined abode; and here his three sons—Shem, Ham, and Japheth—like branches cut from the same tree, took root and flourished, containing within themselves the germs of the three great races, and of all the minor varieties, that subsequently peopled the earth. The distinctive characteristics of the ancestors were indelibly impressed on their respective descendants: thus spiritual and religious tendencies predominated in the offspring of Shem; the sensual and corporeal in those of Ham; while the nations that sprung from Japheth have been no less remarkable for their fuller development of all the powers of the mind. Accordingly, when the set time for the great dispersion arrived (B.C. 2552, according to W. Osburn), Ham and Japheth wandered far from the ancestral home, in quest of abodes congenial to their respective natures; while Shem retained possession of the paternal altars, became the custodier of the one true faith, and the ancestor of that promised Seed of the Woman in whom all nations of the earth shall yet be blessed. Regarding this distribution from another point of view, we observe a curious and remarkable anomaly; for while all the other types of animals, as also of plants, go on decreasing in perfection from the equator to the poles, man presents to our view his most perfect type at the centre of the north temperate zone, in that region of the

* For an important modification of this statement, see 'Facts and Dates,' p. 121.

† The Hebrew Bible apparently gives the date of the Deluge as B.C. 2288; the Septuagint as 3216; while the Great Pyramid at Jeezah indicates an almost exact mean between them, giving it as B.C. 2800.

Caucasus above alluded to; whereas, departing from that region, whether to the north, south, or east, the types gradually lose their symmetry, till, at the remote extremities of the continents, we find the most deformed and degenerate races.

Number and Characteristics of Races.— Modern Ethnography classifies the numerous nations that people the globe into three primary races—viz., the Caucasian, or white and bearded race; the Mongolian, or tawny and beardless race; and the Negro, or black-skinned and woolly-haired race. These are confined to the Old World, and correspond, with certain limitations, to its three continental divisions; the Cacausians occupying nearly all Europe, south-western Asia, and the north of Africa, and extending from Iceland and the Atlantic to the Ganges and Brahmapootra, and from the Arctic Circle to the Tropic of Capricorn; the Mongolians peopling all the rest of Asia, together with certain isolated localities in central and northern Europe; and the Negro race, the whole of continental Africa south of the Tropic of Cancer. In addition to these there are several minor varieties, inhabiting Oceania and the New World, and probably originating in the intermixtures and modifications of the three primary races: as the Malayans in Malaysia and Madagascar; the Papuans in New Guinea and New Hebrides; the Maoris or Australians in Australasia; and the Americans, or aboriginal inhabitants of North and South America. The more prominent characteristics of the principal races are the following:—

Caucasian Race.—The head almost round, or somewhat oblong; skull symmetrical, of great capacity, and high facial angle; face oval, and the features moderately prominent; the forehead arched; the nose narrow, and the bridge somewhat convex; the mouth small, with the lips slightly turned out (especially the lower one), and the outlines gracefully waved; the front teeth placed perpendicularly in the jaws; the chin full and round; skin fair and ruddy, or of different shades of brown; hair abundant on head and chin, but dispersed thinly over other parts of the body; colour various, according to complexion, from a yellow-red auburn and deep brown to glossy black; eyes blue or hazel to dark brown and black; stature of medium size, approaching 6 feet in the fair varieties, but several inches less in the dark. Muscular strength great; intellect highly developed. Languages polysyllabic, copious, and highly inflexional. This type is divided into two branches, the *Indo-European* or Japhetic branch, and the *Syro-Arabian* or Semitic branch. For a fuller description of these we refer the student to the ethnographical sections of Europe and Asia.

Mongolian Race.—Head of a heavy form, though not large; skull square-shaped, rather angular than rounded, its capacity much smaller than the Caucasian, with the facial angle sloping backward; face broad and flattened, cheek-bones projecting, nose flat, space between the eyes flat and very broad; chin prominent; lips well formed; eyes, small, dark, and placed obliquely; skin of an oval tint, never very fair nor intensely swarthy; hair coarse, lank, and black; the beard scanty, not curly, and wanting at the ears; hair scanty on other parts of the skin; stature somewhat low, trunk long, and the extremities rather short. Strength and endurance less than in the Caucasian; intellect moderately developed, but shrewd, sagacious, crafty, and insincere; more obstinate than brave, and extremely cruel to vanquished foes; imagination and taste deficient; imitative and skilful in the domestic arts, but without any scientific enterprise; content with a stationary civilisation; fond of horseback, sluggish, and dirty. Languages inartificial, limited in range of literature, and divided into two principal families—the *Monosyllabic*, which is destitute of inflexions, and the *Finno-Tartarian*, which is slightly inflexional and phonetic. Religious aspirations obtuse, the forms being various, as Buddhism, Shamanism, Polytheism and Mohammedanism.

NEGRO OR ETHIOPIAN RACE.—Skull thick and heavy, compressed at the sides, and elongated from front to back; the forehead convex, retreating, and narrow, with facial angle lower than in the Mongolian type; cheek-bones projecting forward; both jaws much elongated, with the front teeth of the upper turned obliquely forward; mouth wide, and lips very thick; the chin retracted; eyes black and prominent; skin varying from a deep sallow to intense black, and emitting a strong, offensive odour, but soft and silky to the touch; hair of a crisp, woolly texture, and curly on the head, generally destitute on other parts of the body; beard scanty on the upper lip, and chiefly confined to the chin. Body strong, muscular, and often very symmetrical; the arms somewhat elongated; feet broad, heavy, and flat-soled. Intellect without depth or comprehensiveness, but acute and perceptive; patient, submissive, affectionate, honest, cheerful, and contented; well adapted for all domestic and agricultural employments, but do not excel in arts, navigation, or commerce, and have never arrived at a high civilisation. Languages agglutinate, slightly inflexional, but one stage removed from the simplest monosyllabic, and without a written literature. Religion fetichism or demon-worship, but Mohammedanism among the northern tribes; in a civilised state, however, they are susceptible of deep devotional feelings.*

Population of the Globe.—The population of the entire globe cannot, as yet, be stated with anything like accuracy, as many regions still remain unexplored, and as, beyond the limits of Europe, correct census of the population are almost wholly unknown. According, however, to the most recent estimates, it amounts to 1390 millions, that of the different continents being as follows:—

Continents.	Area in English Square Miles.	Population by latest Estimates.
Europe, ...	3,857,122	301,222,352
Asia, ...	16,427,015	784,728,500
Africa, ...	11,556,300	188,000,000
North America, . . .	8,770,382	58,939,239
South America, . . .	7,028,206	27,170,932
Oceania, ...	4,500,000	30,000,000
Total, ...	52,139,025	1,390,061,023

Religions of Mankind.—The following estimate has been made of the numbers professing each of the principal religions now existing; but they can be viewed as only a rough approximation to the truth:—

Roman Catholics,	175,000,000	
Protestants,	112,000,000	
Greek Church,	90,000,000	Christians, 490,000,000
Minor Christian Sects,	23,000,000	
Jews,	7,000,000	Jews, 7,000,000
Mohammedans,	145,000,000	Mohammedans, 145,000,000
Brahmins,	225,000,000	
Buddhists,	395,000,000	Heathens, 735,000,000
Other Pagans,	115,000,000	
Not accounted for,		103,000,000
Population of the Globe,		1,390,000,000

* For a description of the sub-varieties above enumerated, the student is referred to the sections of this work treating of America and Oceania.

PART III.

POLITICAL GEOGRAPHY.

EUROPE.

1. Boundaries.—North, the Arctic Ocean; West, the Atlantic; South, the Strait of Gibraltar, the Mediterranean, Sea of Marmora, Black Sea, and Mount Caucasus; East, the Caspian Sea, the River Ural, the Ural Mountains, and the River Kara.

Continental Europe lies between the parallels of 36° 1′ and 71° 9′ N., and between the meridians of 9° 30′ W., and 65° E.; it occupies 35° 8′ of lat. and 74° 30′ of lon., and, with the exception of Lapland and part of the government of Arkhangel, is wholly included within the north temperate zone. But insular Europe, including Iceland, Spitzbergen, the Azores, Candia, &c., embraces a much larger area—viz., from lat. 34° 55′ (Candia) to 80° 48′ (Spitzbergen), and from lon. 31° 18′ W. (Azores) to 65° E. (Ural Mountains),—being in all, 45° 53′ of lat. and 96° 18′ of lon. Grodno, in Russia, in the centre of the continent, is nearly in the same latitude as the centre of Ireland, the south of Labrador, the north of Lake Winnipeg and Queen Charlotte Island, and as Tula, Uralsk, and the middle of Lake Baikal; and nearly in the same longitude as Hammerfest, Tornea, Riga, Lemberg, Klausenburg, Athens, and the east side of Tripoli and Cape Colony. The south-east corner of Sweden is the centre of insular Europe.

2. Form, Dimensions, Extreme Points, and Coast-Line.—Europe is an immense peninsula jutting out from Western Asia, and broken up into a great number of smaller peninsulas, the principal of which are: The Scandinavian, bet. the Baltic and Atlantic; the Danish, bet. the Baltic and North Sea; Brittany, bet. the English Channel and Bay of Biscay; the Spanish, bet. the Atlantic and Mediterranean; the Italian, bet. the Adriatic and Tyrrhenian Sea; the Hellenic Peninsula with Istria and the Morea, bet. the Adriatic and Black Sea; and the Crimea, bet. the G. of Odessa and Sea of Azov. The peninsulas occupy one-fourth of the entire area of the continent.

All these, with the single exception of the Danish, stretch out in a southerly direction, and have mountain-ranges occupying their entire length. This remarkable law holds good with almost all the peninsulas

of the globe. The extreme length of Europe, from Cape St Vincent in Portugal to Orsk in the Ural Mountains, is 3400 miles; extreme breadth, from North Cape in Lapland to Cape Matapan in Greece, 2450 miles. Cape Nordkyn in Norway is the most northern point of the continent; Punta da Tarifa, near Gibraltar, the most southern; Cabo da Roca, in Portugal, the most western; and the Urals, in Perm, the most eastern. Owing to its peculiar form and numerous deep indentations, the coast-line greatly exceeds in proportion that of every other continent. It is estimated at nearly 17,000 miles, being one mile of coast to every 225 miles of surface; while Asia has only one to every 550 miles; Africa, one to every 710; and America, one to every 490. The continental boundary does not exceed 2500 miles. It is in a great measure owing to this peculiarity of surrendering herself to the ocean, and her central position in the terrestrial hemisphere, that Europe owes her high civilisation and unrivalled commercial prosperity.

3. **Area and Population.**—The total area of Europe, including the islands, is estimated at 3,857,122 sq. miles, or considerably less than one-fourth the size of Asia. Hence, reckoning the area of Oceania at 4,500,000 sq. miles, Europe is the smallest of the six great divisions of the globe, of the land-surface of which it embraces only a fourteenth part. Russia embraces much more than a half of its entire area, and the British Isles less than a thirtieth. According to the most recent census of its various states, the population, in 1872, amounted to 301,222,352, or nearly one-fourth of the entire human race. It is by far the most densely peopled of all the continents, having 78 persons to each sq. mile. The seven most densely peopled countries are,—Belgium, which has 440 persons to the sq. mile; the Netherlands, 275; the United Kingdom, 259; Italy, 233; South Germany, 210; Prussia and North Germany, 194; France, 178.

4. **Political Divisions.**—Europe contains, at present, sixty-seven separate states, all of them more or less independent. Of this number 26 belong to the recently constituted German Empire (including Alsace), and 25 to Switzerland. Counting the confederations as forming one State each, we have in all 16 states, the names, areas, populations, and capitals of which will be found in the following table. There are 4 Empires (Germany, Austria, Russia, and Turkey); 37 Monarchies (including Kingdoms, Grand Duchies, Duchies, and Principalities); and 26 Republics. The various states are arranged in three separate classes, according to their political importance. Great Britain, France, Germany, Russia, and Austria are called the five Great Powers, because they exercise a decided influence on the political affairs of Europe. Those of the second rank are Spain, Kingdom of Italy, Belgium, Sweden and Norway, and Turkey; while those of the third rank are Portugal, Switzerland, the Netherlands, Greece, and Denmark.

TABLE OF EUROPEAN STATES.

Name and Position.	Area in Eng. Square Miles.	Population according to the latest Census.	Capital.	Rivers, &c., on which the Capital stands.	Date of Census.
The British Isles, or United Kingdom, } W. of Central Europe, . .	122,550	31,817,108	London	Thames	1871
Portugal, in the S.W. of Europe, ...	37,965	4,360,974	Lisbon	Tagus	1868
Spain, E. of Portugal, ...	195,914	16,641,980	Madrid	Manzanares	1868
France, N.E. of Spain, ...	204,926	36,612,064	Paris	Seine	1871
Belgium, N. of France, ...	11,408	5,026,336	Brussels	Senne	1869
Netherlands, N. of Belgium, ...	13,631	3,688,337	Amsterdam	Amstel	1870
Denmark, N.E. of Netherlands, ...	54,935	1,861,720	Copenhagen	The Sound	1870
German Empire, E. of France,—	(212,370	41,085,516)	Berlin	Spree	1872
Prussia, E. of Netherlands, ...	135,904	24,693,065	Berlin	Spree	1872
Baden, N.E. of France, ...	5,912	1,461,428	Carlsruhe, »	Rhine	1872
Würtemberg, E. of Baden, ...	7,533	1,818,484	Stuttgart	Nesenbach	1872
Bavaria, E. of Würtemberg, ...	29,342	4,864,402	Munich	Isar	1872
Hesse-Darmstadt, N. of Baden, ...	2,962	852,343	Darmstadt	Darm	1872
Elsass-Lothringen, W. of Baden, ...	4,500	1,597,219	Strasburg	Rhine	1872
Austria, S.E. of Prussia, ...	240,351	35,904,435	Vienna	Danube	1870
Switzerland, W. of Austria, ...	15,716	2,669,095	Bern	Aar	1870
Kingdom of Italy, S.E. of Switzerland, ...	114,445	26,789,008	Rome	Tiber	1872
San Marino, in E. of Italy, ...	24	7,303	S. Marino	Ausa	1868
Greece, S.E. of Italy, ...	20,152	1,457,894	Athens	Gulf of Egina	1871
Turkey, N. of Greece, ...	297,500	16,342,000	Constantinople	Bosphorus	1867
Russia, N.E. of Turkey, ...	2,110,317	71,195,391	St Petersburg	Neva	1867
Sweden, N.W. of Russia, ...	170,621	4,168,000	Stockholm	Lake Mælar	1868
Norway, W. of Sweden, ...	123,297	1,729,691	Christiania	Christ. Fiord	1868
Total, ...	3,857,122	301,322,852			

5. **Isthmuses and Capes.**—Isthmus of Corinth, connecting the Morea with Northern Greece; Isthmus of Perekop, connecting the Crimea with the mainland of Russia. The other isthmuses, though numerous, have no distinctive names. Owing to its peninsular character, the capes and headlands of Europe are extremely numerous. The following are the principal:—

In the Arctic Ocean—C. Nordkyn, in Finmark, the most N. point of the continent; North Cape, in I. Magerŏe; C. Nord, N.W. of Iceland. *In the Baltic*—The Naze, S. of Norway; Skaw, N. of Denmark; Hango Head, S.W. of Finland. *In North Sea and Atlantic*—Sumburgh Head, S. of Shetland; Dennis Ness, N. of Orkney; Dunnet Head, Duncansby Head, and Cape Wrath, N. of Scotland; Buchanness the most E., Point of Ardnamurchan the most W., and Mull of Galloway the most S. points of Scotland; Lowestoft Ness the most E., South Foreland the most S.E., Lizard Point the most S.W., and Land's End the most W. points of England; Malin Head in the N., Fair Head in the N.E., Carnsore Point in the S.E., C. Clear in the extreme S., and Dunmore Head in the extreme W. of Ireland; Capes Gris-Nez, Barfleur, La Hague, in the English Chanuel; Raz Point, the extreme N.W. of France; Capes Ortegal and Finisterre, N.W. of Spain; Cabo da Roca, in Portugal, the most W. point of the continent; C. St Vincent, S.W. of Portugal; Pt. Albernos, in the Azores, the most W. point of insular Europe. *In the Mediterranean*—Punta da Tarifa, in Spain, the most S. point of the continent; Capes de Gata, Palos, St Martin, Creux, E. of Spain; Corso, N. of Corsica; Teulada, S. of Sardinia; Passaro, S.E., and S. Vito, N.W. of Sicily; Spartivento, Nau, and Leuca, S. of Italy; Matapan, S. of Greece; Matala (Crete), the most S. point of insular Europe; Chersonese, S.W. of Crimea; Abcheran, in the Caspian, the E. extremity of Mount Caucasus.

6. **Islands.**—Very numerous, and best arranged in groups or classes, according to the seas in which they are situated:—

In the Arctic Ocean—Novaia Zemlia ("new land") and Vaigatch, N.E. of Russia, and forming an insular prolongation of the Ural Mountains; Spitsbergen, N. of Lapland; Franz Joseph Land, midway between Novaia Zemlia and the Pole, forming the most northern known land on the globe (lat. 83° 15′); Kolguev, at the entrance to the Gulf of Tcheskaia; Magerŏe group, fringing the N.W. coast of Finmark; Loffoden Islands, W. of Norway. *In the Atlantic*—Iceland, 700 miles W. of Norway, and immediately S. of the Polar Circle; Farŏe Isles, 35 in number, midway between Iceland and Shetland, and at the northern limit of the growth of grain; the British Isles, 5500 in number, separating the Atlantic from the North Sea (principal, Great Britain, the largest island belonging to Europe, and the seventh largest in the world; Ireland, Anglesea, Isle of Man, Hebrides or Western Islands, Orkney Islands, Shetland Islands, Isle of Wight, Scilly Islands); the Norman or Channel Isles, N. of France; the Azores, a volcanic group, 800 miles W. of Portugal. *In the Baltic*—The Danish group, between Denmark and Sweden (principal, Seeland, Fühnen, Langeland, Laaland, Falster, Alsen, Bornholm); the Swedish group, S.E. of Sweden (Gothland and Oeland); Rügen, N.W. of Prussia; the Aland Isles, at the entrance of the Gulf of Bothnia; the Livonian group (Oesel and Dago), at the mouth of the Gulf of Riga; Cronstadt or Kotlinoi, in the E. extremity of the Gulf of Finland, with a celebrated Rus-

sian fortress. *In the Mediterranean*—The Balearic Isles, east of Spain (principal, Majorca, Minorca, Iviça, and Formentera); the Sardo-Corsican group, W. of Central Italy (principal, Sardinia, Corsica, Elba); the Sicilian group, S. of Italy (principal, Sicily, Lipari Isles, Ustica, and Pantellaria); the Maltese group, or Malta, Gozo, and Comino; the Illyrian Archipelago, in the Gulf of Quarnero; the Dalmatian Archipelago, on the W. coast of Dalmatia; the Ionian Isles, W. of Greece; Eubœa or Negropont, E. of Hellas; the Cyclades, E. of the Morea; the Sporades, N. of Eubœa; Candia, S.E. of the Morea.

7. **Seas, Gulfs, and Straits.**—No other continent has so many inland seas and arms of the sea. We can enumerate only the following:—

The Mediterranean, between Europe and Africa, 2300 m. long, and 976,000 m. in area. Its principal members are, G. of Lions, G. of Genoa, the Tyrrhenian Sea, bet. Italy and the Sardo-Corsican islands; the Adriatic, bet. Italy and Turkey; Ionian Sea, bet. Greece and Italy; the Ægean Sea or Archipelago, bet. Greece and Asia Minor; Sea of Marmora, bet. European and Asiatic Turkey. *The Black Sea*, bet. Russia and Asiatic Turkey, 690 m. long by 380 m. broad, and having an area of 172,500 sq. m. Its branches are, G. of Odessa, Str. of Kherson, G. of Perekop, Sea of Azov, G. of Sivash or Putrid Sea. *The Caspian Sea*, S.E. of Russia, 700 m. long, 200 m. broad; area, 178,866 sq. m.; surface 83 feet lower than the Black Sea; drained exclusively by evaporation; probably communicated at a remote period with the Black Sea, at which time its area was vastly larger: belongs more to Asia than to Europe. *The White Sea*, an inlet of the Arctic Ocean, in the N. of Russia; area, 40,000 sq. m.: its parts are, Gulfs of Onega, Kandalak, and Arkhangel; *Tcheskaia Gulf*, N.E. of Russia; Varanger Fiord, bet. Russia and Norwegian Lapland; West Fiord, bet. Norway and Loffoden Isles. *The Baltic*, a large inland sea communicating with the North Sea, and separating Central from Northern Europe; length 900 m., br. 180 m.; area, 135,000 sq. m.; shallow throughout, sailing dangerous, tides scarcely perceptible: branches, G. of Bothnia, bet. Sweden and Finland; G. of Finland, S. of Finland; G. of Riga, bet. Livonia and Courland; G. of Dantzic, N. of Prussia; G. of Lubeck, bet. Holstein and Mecklenburg. *The North Sea* or *German Ocean*, bet. the British Isles and the continent; length from Shetland to Dover, 700 m.; greatest br., 420 m.; area, 244,000 sq. m.; traversed by immense sand-banks, as the Dogger Bank and Long Forties: branches, the Skager Rack, bet. Norway and Denmark, 60 m. broad; the Kattegat, bet. Sweden and Denmark; the Dollart and Zuyder Zee, in the N. of Holland; the English Channel, bet. England and France; the estuary of the Thames, the Wash, the Firths of Forth and Tay, the Moray and Pentland Firths. *The Irish Sea*, bet. Great Britain and Ireland; branches, North Channel, St George's Channel, Solway Firth, and Bristol Channel. *The Bay of Biscay*, N. of Spain, famous for its heavy seas and dangerous navigation.

The Principal Straits are: Str. of Gibraltar, uniting the Mediterranean with the Atlantic; Str. of Bonifacio, bet. Corsica and Sardinia; Str. of Messina, bet. Italy and Sicily; Str. of Otranto, bet. Italy and Turkey; the Hellespont or Dardanelles, uniting the Archipelago with the Sea of Marmora; the Bosporous, or Str. of Constantinople, uniting the Sea of Marmora with the Black Sea; Str. of Kertch or Yenikaleh, bet. the Black Sea and Sea of Azov; Pentland Firth, bet. Scotland and

Orkney; Str. of Dover, bet. England and France; The Sound, bet. Sweden and Seeland; Great Belt, bet. Seeland and Fühnen; Little Belt, bet. Schleswig and Fühnen.

8. **Mountain-Systems.**—Eastern Europe, or Russia, is nearly all one uniform plain, and the northern portion of Central Europe is also remarkably level; but Western and Southern Europe are highly mountainous. The various chains can be all arranged into eight grand mountain-systems—viz., the British, Hesperian, Sardo-Corsican, Alpine, Scandinavian, Sarmatian, Uralian, and Caucasian. The two last are partly European and partly Asiatic; but as their highest summits occur in this continent, and as there are no other mountains in Eastern or South-eastern Europe, they are most conveniently treated of here. These eight systems, with their widely-extended bases and ramifications, occupy the entire area of S.W. Europe.

The British System traverses the British archipelago, from the Scilly Isles to Shetland, a distance of 800 miles in length. It embraces also the Faröe group, midway between Shetland and Iceland. As compared with some of the other mountain-systems of Europe, it is of very moderate elevation, and nowhere reaches the line of perennial snow; though Ben Nevis, its culminating-point, lat. 56° 48′, probably comes short of it by less than 100 feet. The system embraces various mountain-ranges, the principal of which traverses the extreme length of the largest island, and forms the water-parting between the North Sea and the Atlantic. The mountains of Ireland and of the smaller islands are of greatly inferior elevation. We subjoin the names of the principal ranges, with the height of their loftiest mountains; and for particulars, refer the student to Scotland, England, and Ireland: *Faröe Isles*—Island of Ostero, 2864 ft.; *Shetland Isles*—Rooness, in Mainland, 1476 ft.; *Orkneys*—Hill of Hoy, 1555 ft.; *Northern Range of Scotland*—Ben Attow, 4000 ft.; *Grampians*—Ben Nevis, the highest mountain in the British Isles, 4406 ft.; *Cheviot Hills*, between Scotland and England, 2741 ft.; *Pennine Chain*, in north of England—Cross Fell, 2927 ft.; *Cumbrian Chain*, in Cumberland—Scawfell, 3229 ft.; *Cambrian Chain*, in Wales (Snowdon), 3590 ft.; *Devonian Chain*, in the S.W. of England (Caws and Beacon), 1792 ft.; *Irish Mountains*—M'Gillicuddy's Reeks, in S.W., 3404 ft. Height of snow-line in the centre of the archipelago—lat. 55°, about 5000 ft.; do. the Grampian range, about 4500 ft.

The Hesperian or Spanish System occupies the whole Spanish peninsula, the Balearic Isles, and the portion of France which lies south of the Garonne. It forms in its interior an elevated plateau of great extent, which has an average height of about 2500 feet, and embraces many lofty mountain-ranges, the principal of which are subjoined (see under "Spain"): *The Pyrenees* separate the Bay of Biscay and the Garonne basin from the basins of the Douro and Ebro, 11,168 ft.; *Cantabrian Chain*, bet. Douro and Tagus, 10,552 ft.; *Mountains of Toledo*, bet. the Tagus and Guadiana, 5110 ft.; *Sierra Morena*, bet. the Guadiana and Guadalquivir, 5550 ft.; *Balearic Mountains*, 5114 ft.; *Sierra Nevada*, bet. the Guadalquivir and the Mediterranean, 11,663 ft. Line of perpetual snow on Sierra Nevada, 11,200 ft.; do. in the Pyrenees, 8856 ft.

The Sardo-Corsican System is confined to the islands Corsica and

Sardinia, and extends in its principal chain from Cape Corso in the former to Cape Teulada in the latter. Monte Cinto, in Corsica, 8882 ft.; Monte Genargentu, in Sardinia, 7000 ft.; snow-line in lat. 42° 30′, 9000 ft.

The Alpine System traverses France, Italy, and Turkey, and extends from the Mediterranean to the Great Central Plain, and from the Garonne to the Dniester. It embraces five distinct minor systems, all of great altitude, including the Alps proper, containing Mont Blanc in Savoy (15,781 feet), the highest summit in Europe. In reality, however, that honour should be awarded to Mount Elburz, the culminating-point of the Caucasus chain, which is 2790 feet higher than Mont Blanc, and within the limits of Europe.

(1.) The Alps proper, a huge crescent-shaped range, extending from Nice to Vienna, and bounded by the basins of the Rhone and Doubs on the west, of the Aar and Danube on the north and east, and by those of the Po and Save on the South: total length, 600 miles. It consists of two contiguous chains—viz., the Western Alps, from the Mediterranean at Nice to Mont Blanc in Savoy, dividing France from Italy, and the Rhone from the Po; and the Eastern Alps, of much greater breadth, and consisting of two series—a northern and a southern—the former including the Bernese Alps, the Alps of St Gall, and the Noric Alps, and extending nearly to Vienna; and the latter including the Pennine Alps, the Helvetian Alps, the Rhaetian Alps, the Carnic and Julian Alps. The highest summits are: *Western Alps*—Mt. Pelvoux, 13,440 ft.; *Eastern Alps*—N. Series, Finster-aar-horn, 14,100 ft.—S. Series, M. Blanc, 15,781 ft. Height of line of perennial snow in Swiss Alps, 8900 ft.

(2.) The French or Gallo-Francian Mountains, embracing all the mountains of France north of the Garonne and west of the Rhone, and connected with the Alps proper by the Jura chain (see under "France"). Mount Reculet, in Jura chain, 5632 ft.; Ballon de Guebwiller (Vosges), 4694 ft.; Cote d'Or Mts., 1968; Cevennes Mts., *M. Mezin*, 5820; Auvergne, *Puy de Sancy*, 6187.

(3.) The Apennines, 800 miles long, set out from the Maritime Alps, traverse the entire length of Italy, reappear in the island of Sicily, and form the water-parting between the Mediterranean on the one side, and the Po and Adriatic on the other. Monte Corno, in North of Naples, 9521 ft.; M. Etna, the culminating-point of the system, 10,874 ft. Height of snow-line in Sicily, 9500 ft.; height in Central Italy, 8400.

(4.) The Slavo-Hellenic Mountains comprise all the mountains in the Hellenic peninsula south of the Danube and Save, together with those of Croatia and Dalmatia. There are two principal ranges—one, the *Hellenic*, stretching southward along the E. coast of the Adriatic, and terminating at Cape Matapan in Greece; the other, the *Balkan*, branching off from the Hellenic in the N.E. of Albania, pursuing an easterly direction to Cape Emineh in the Black Sea, and forming the boundary between Roumelia and Bulgaria. *Hellenic Range*—Mt. Olympus, 9749 ft. *Balkan Range*—Mt. Tchar Dagh, 9840. Height of snow-line on Mt. Olympus, 9000.

(5.) The Hercynio-Carpathian system comprises all the mountains lying between the Danube, Dniester, Vistula, Rhine, and the Baltic, being the entire remainder of the great Alpine system. The *Carpathians*, M. Botschetje, 9528 ft.; *Riesengebirge*, between Bohemia and Moravia, 5275 ft.; *Schwartzwald*, in Baden, 4590 ft.; *Böhmerwald*, between Bohemia and Bavaria, 4613 ft.; *The Harz*, in Hanover and Prussia, 3749 ft. Height of snow-line in the Carpathians, about 6000 ft.

The Scandinavian System traverses the Scandinavian peninsula, from the Atlantic to the G. of Bothnia, and from the North Cape to the Naze. Commencing at the Naze, in the south of Norway, it proceeds northward through that kingdom as far as the latitude of Trondhjem, then forms the boundary between Norway and Sweden, and terminates at the North Cape in Lapland, after traversing a total length of about 1150 miles. In the south of Norway its breadth extends about 200 miles, but north of Trondhjem only 60 miles. The chain is not continuous, but consists rather of a series of broad plateaux, separated occasionally by deep and narrow valleys, and very rich in minerals. There are three principal ranges—the Hardanger, or Langefield, in the south, the Dovrefield in the middle, and the Kiolen Mountains in the north. Each of these has numerous glaciers: *Langefield*—Skagesloestinden, 8670 ft.; *Dovrefield*—Sneehätten, 7620 ft.; *Kiolen*—Sulitelma (lat. 67°), 6200 ft. Height of snow-line in the Langefield, 5000 ft.; Folgefonden glacier, near Bergen, 6200 ft.

The Sarmatian System is only so named by way of courtesy, as it, in fact, contains no real mountains; but being the only elevated ground between Scandinavia and the Ural Mountains, it possesses considerable hydrographical importance. The *Valdai Hills*, in the Government of Novgorod, attain an elevation of only 1100 feet, and form the water-parting between the Baltic, the Black Sea, and the Caspian.

The Uralian System forms a natural boundary between Europe and Asia, and the water-parting between the extensive basins of the Volga and the Obi. The principal chain (the Urals) extends from Orenburg, on the river Ural to the Arctic Ocean, and reappears in the lengthened insular group of Novaia Zemlia; length, 1680 miles. It consists of round-backed, plateau-shaped masses of very moderate elevation, generally not exceeding 2000 feet, but rich in gold, platinum, and other metals. The highest summits are: Konjak-Ofski (lat. 59° 55′), 5397 ft.; Obdorsk (lat. 67°), 5286 ft.

The Caucasian System extends in one immense chain from the Black Sea to the Caspian, forms the south-eastern boundary of European Russia, and separates the basins of the Kuban and Terek on the north, from those of the Kur and Rioni on the south. Length, 750 miles; mean elevation, from 8000 to 9000 feet. The culminating-point of the system, and in fact of Europe, is Mount Elburz, near the centre of the chain, 18,571 ft. above the sea, and 2790 ft. higher than Mont Blanc, the highest summit of the Alps. Mount Kazbek (long. 44° 20′), 16,523 ft. Height of line of perennial congelation, 11,000 ft.; limit of the cereals, 7000 ft.

9. **Volcanoes.**—The volcanoes of Europe, active or extinct, are very numerous. Of the former, upwards of twenty are enumerated, all of which, except Mount Vesuvius, near Naples, are situated in islands; but the latter occur more frequently in the interior of the continent, as the mountains of Auvergne in France; the Eastern Pyrenees in Catalonia; the Eifel in Prussia; the Westerwald, between Nassau and Westphalia; the Vogelsberg, between the Main and Weser; and many others in Germany.

The principal *active* volcanoes, which are for the most part confined to the basin of the Mediterranean, are: Mount Vesuvius* in

* This celebrated volcano, the only existing active one on the continent.

Naples; Mount Etna* in Sicliy; Stromboli,† Vulcano, and Vulcanello. in the Lipari Islands; Mount Hecla,‡ and several others, in Iceland; Mount Beeren in Jan Mayen, midway between Iceland and Spitzbergen; Sarytcheff in Novaia Zemlia, the most northern of known volcanoes. To volcanic agency must also be referred the Geysers, or intermittent boiling springs of Iceland. The Azores are all of volcanic origin, and contain many recently-extinct volcanoes; as also many of the Cyclades, and the N.W. of the island Sardinia. The earthquake district of Europe extends from the Caspian Sea to the Azores, the central line of concussion being more or less parallel. to the Pyrenees, Alps, Carpathian and Caucasian Mountains.

10. **Plains and Table-Lands.**—Notwithstanding the highly mountainous character of Western Europe, by far the greater portion of the surface of the continent is occupied by plains and elevated plateaux or table-lands.

The most important *Plains* are: the Great Plain of Central and Eastern Europe, extending from the Str. of Dover to the Urals and Caspian, and from the Arctic Ocean to the Black Sea,—this plain has an area of 2,500,000 square miles, being about two-thirds of the entire continent; the Hungarian Plain, traversed by the Danube and Theiss, 300 miles long, and from 300 to 400 feet above the sea-level; Plain of the Lower Danube, between the Eastern Carpathians and the Balkans; Plain of Bohemia, in the basin of the Upper Elbe; Plain of Lombardy, between the Alps and Apennines, and watered by the Po. The principal *Table-lands* are: the Plateau of Central Spain, of great extent, and about 2500 feet high; the Plateaux of Langres, Orleans, and Auvergne, in Central France; the Plateau of Bavaria, about 2000 feet high; and Transylvania, embosomed in the chain of the Carpathians.

11. **Water-parting and River-Basins.**—All the rivers of Europe belong to one or other of seven great basins,—the Arctic and Atlantic Oceans, the North Sea, the Baltic, Mediterranean, Black, and Caspian Seas. The elevated ridge which separates one basin from another is called the *Water-parting*, and that which divides the seven basins into two principal groups is denominated the *Great Water-parting*.

Commencing at the south-western extremity of the continent, near the Strait of Gibraltar, the latter pursues a general N.E. direction, till it arrives at the northern termination of the Ural Mountains, thus cutting Europe diagonally into two great sections or slopes, now usually called *Watersheds*—the one inclining to the N.W., and the

buried the two cities, Herculaneum and Pompeii, with their inhabitants, during an eruption in the year 79 A.D.

* The largest and most famous volcano in Europe: sixty eruptions are recorded as having taken place during the historic period, the last in 1868.

† Constantly burning, and sometimes called, in consequence, the lighthouse of the Mediterranean.

‡ Its last great eruption (in 1845) sent the ashes as far as the Orkneys, 600 miles distant.

other to the S. E. By glancing at a map of Europe, it will be seen that all the great rivers follow one or other of these two directions.* Hence the seven basins may be reduced to *two grand basins*, one of which will include all the rivers finding their way to the Atlantic and Arctic Oceans, with their branches the North Sea, the Baltic, and the White Sea; and the other, those flowing into the Mediterranean, with its branches the Adriatic, the Black Sea, and the Caspian. For though the two last-mentioned seas are at present separated by a slight elevation, it is certain they were united during the Tertiary ages.

12. **River-Basins and Capitals.**—The following Table shows the total and direct lengths in English miles of all the principal rivers of Europe, the areas of their basins in English square miles, and the capitals of the states and provinces embraced in those basins. The rivers are arranged under the seven oceanic basins to which they respectively belong, and in the order in which their mouths would occur to an exploring expedition, which, setting out from the northern extremity of the Urals, should skirt the coast westward, southward, and then eastward, till it arrived at the western extremity of Mount Caucasus. The capitals of independent states are distinguished by SMALL CAPITALS, those of provinces by Roman letters; and when the name of the state is different from that of its capital, the former is added within parentheses.

THE RIVER-BASINS OF EUROPE.

Name of River or Estuary.	Total Length in English Miles.	Direct Length of Basin in English Miles.	Area of Basin in Square Miles.	Capitals of States and Provinces in each Basin.
1. *Basins inclined to the Arctic Ocean.*				
Petchora, . .	900	520	114,400	
Mezen, . .	400	300	30,100	
Dwina, . .	700	500	134,400	Arkhangel, Vologda.
Onega, . .	300	250	21,000	
Alten Fiord, .	150	80	..	Altengard (Finmark).

* But let us trace the Great Water-parting more exactly. Commencing, as we have said, near the Rock of Gibraltar, it follows the crest-line of the Sierra Nevada, Pyrenees, Cevennes, Côte d'Or, Vosges, and Jura Mountains; passes north of Lake Geneva to the Bernese Alps and Mount S. Gothard; sweeps round Lake Constance, which it keeps on the left, around the source of the Danube, separating its basin from that of the Rhine, Elbe, and Oder; passes between the basins of the Vistula and Dniester, and of the Düna and Dnieper, then north and east through the Valdai Hills, and around the head-waters of the Volga; pursues its course between Lakes Onega and Bielozero, turns south-east around the sources of the Northern Dwina and Petchora, whose basins it separates from that of the Volga; and then, proceeding northward along the Uralian Chain, it finally arrives at the Arctic Ocean.

Name of River or Estuary.	Total Length in English Miles.	Direct Length of Basin in English Miles.	Area of Basin in Square Miles.	Capitals of States and Provinces in each Basin.
2. Basins inclined to the Atlantic and North Sea.				
Trondhjem Fiord,	100	60	..	Trondhjem.
Torrisdals, .	120	100	..	Christiansand.
Christiania Fiord,	60	55	..	CHRISTIANIA (Norway).
Gotha, . .	400	300	17,000	Göteborg (Gothland).
3. Basins inclined to the Baltic.				
L. Mälar, . .	170	130	..	STOCKHOLM (Sweden).
Dal, . . .	250	200	..	
Angerman, .	150	120	..	Hernösand (Norrland).
Umea, . .	250	220	..	
Neva and Gulf of Finland, .	625	500	99,700	Helsingfors (Finland), Revel (Esthonia), Pskov, St PETERSBURG (Russia), Novgorod, Petrozavodsk (Olonetz).
Düna, . .	400	300	34,700	Riga (Livonia), Vitebsk.
Niemen, . .	400	270	35,700	Grodno, Suwalki (Augustowo), Wilna.
Pregel, . .	120	120	6,300	Königsberg (Prussia Proper).
Vistula, .	580	360	72,300	Plock, Warsaw (Poland), Radom, Lemberg (Galicia), Lublin.
Oder, . .	445	360	45,200	Stettin (Pomerania), Breslau (Prussian Silesia), Posen (Prussian Poland), Troppau (Austrian Silesia).
Stör, . .	95	55	..	SCHWERIN (Mecklenburg-Schwerin).
Trave, . .	50	40	..	LUBECK.
Schleifiord, .	25	20	..	Schleswig.
4. Basins inclined to North Sea.				
Lymfiord, .	100	90	500	Aalborg (Jutland).
Elbe, . .	550	420	55,000	Glucksstadt (Holstein), HAMBURG, Magdeburg (Prussian Saxony), DESSAU (Anhalt), DRESDEN (Saxony), NEU-STRELITZ (Mecklenburg-Strelitz), BERLIN (Prussia), RUDOLSTADT (Schwartzburg Rudolstadt), GREITZ (Reuss Greitz), ALTENBURG (Saxe-Alt.), SONDERSHAUSEN (Schwarzburg-Sonder.), GOTHA (Saxe-Coburg-Gotha), WEIMAR (Saxe-Weimar), Prague (Bohemia).
Weser, . .	230	250	17,700	BREMEN, BUCKEBURG (Schaumburg-Lippe), MEININGEN (Saxe-Mein.), OLDENBURG, Hanover, BRUNSWICK, DETMOLD (Lippe-Det.), AROLSEN (Waldeck, Cassel (Hesse-Cassel).

Name of River or Estuary.	Total Length in English Miles.	Direct Length of Basin in English Miles.	Area of Basin in Square Miles.	Capitals of States and Provinces in each Basin.
Basins inclined to North Sea (continued).				
Ems,	160	130	..	Münster (Westphalia).
Hunse,	50	40	..	Gröningen, Assen (Drenthe).
Vecht,	90	60	..	Zwoll (Overyssel).
Rhine,	600	400	75,000	Amsterdam (Netherlands), Utrecht, Arnhem (Guelderland), Cologne (Rhenish Prussia), Wiesbaden (Nassau), Carlsruhe (Baden), Strasbourg[1] (Alsace), Vaduz (Liechtenstein), Nancy (Lorraine), Darmstadt (Hesse-Darm.), Stuttgart (Würtemberg), Bern (Switzerland). [2]
Meuse,	580	230	..	Bois-le-duc (N. Brabant), Maestricht (Dutch Limburg), Liege, Namur, Arlon (Belgian Luxemburg).
Scheldt,	210	120	..	Middelburg (Zealand), Antwerp, Bruges (W. Flanders), Ghent (E. Flanders), Brussels (Belgium), Hasselt (Belgian Limburg), Lille (French Flanders), Arras (Artois), Mons (Hainault).
Basins inclined to the Atlantic (No. 2 continued).				
Somme,	115	90	..	Amiens (Picardy).
Seine,	414	250	28,500	Rouen (Normandy), Paris (France), Troyes (Champagne).
Vilaine,	125	80	..	Rennes (Bretagne).
Loire,	530	350	44,500	Angers (Anjou), Tours (Touraine), Orleans (Orleannais), Nevers (Nivernais), Le Mans (Maine), Limoges (Limousin), Gueret (La Marche), Poitiers (Poitou), Bourges (Berry), Moulins (Bourbonnais), Clermont (Auvergne).
Charente,	200	110	..	Rochelle (Aunis), Saintes (Saintonge), Angoulême (Angoumois).
Garonne,	300	230	31,000	Bordeaux (Guienne), Toulouse (Languedoc), Auch (Gascogne), Foix (Foix).

(1) For the sake of brevity, the old provinces of France and Spain are those here employed, but the new divisions will be found in the corresponding tables under those countries.
(2) The capitals of the Swiss cantons will be found in the River-System of Central Europe.—(See under "Austria.")

Name of River or Estuary.	Total Length in English Miles.	Direct Length of Basin in English Miles.	Area of Basin in Square Miles.	Capitals of States and Provinces in each Basin.
Basins inclined to the Atlantic (No. 2 continued).				
Adour,	95	90	..	Pau (Béarn).
Nervion,	45	30	..	Bilbao (Basque Provinces).
Nalon,	62	50	..	Oviedo (Asturias).
Ulla,	64	50	..	Santiago (Galicia).
Minho,	220	150	14,700	
Ria d'Este,	65	50	..	Braga (Minho).
Douro,	450	340	34,200	Oporto (Douro), Braganza (Tras-os-Montes), Leon, Burgos (Old Castile).
Mondego,	180	90	..	Coimbra (Beira).
Tagus,	540	450	33,000	Lisbon (Portugal), Madrid (Spain).
Sado,	100	70	..	Evora (Alentejo).
Guadiana,	400	320	25,000	Badajos (Sp. Estremadura).
Guadalquivir,	300	270	19,500	Seville (Andalucia), Granada.
5.—Basins inclined to the Mediterranean.				
Segura,	180	120	..	Murcia.
Guadalaviar,	180	100	..	Valencia.
Ebro,	340	280	32,900	Zaragoza (Arragon), Pamplona (Navarre).
Llobregat,	75	70	..	Perpignan (Rousillon).
Rhone,	645	340	37,900	Avignon, Lyon (Lyonnais), Grenoble (Dauphiné), Besançon (Franche (Comté), Dijon (Bourgogne), Chambery (Savoy).
Arno,	90	75	..	Florence (Tuscany).
Tiber,	185	130	..	Rome (K. of Italy).
Po,	450	280	34,600	Turin (Piedmont), Modena, Parma, Venice (Venetia), Milan (Lombardy).
Narenta,	140	70	..	Mostar (Herzegovina).
Bojana,	80	65	..	Scutari (Albania).
Salembria,	110	65	..	Larissa (Thessaly).
Vardar,	170	125	..	Salonika.
Maritza,	260	160	18,200	
6.—Basins inclined to the Black Sea.				
Danube,	1795	980	306,000	Silistria (Bulgaria), Belgrade (Servia), Peterwardein (Military Frontier), Buda (Hungary), Vienna (Austria), Linz (Upper Austria), Jassy (Moldavia), Czernowitz (Buckowina), Bucharest (Roumania), Agram (Croatia), Bosna-Serai (Bosnia), Laybach (Illyria), Klausenburg (Transylvania), Esek (Sclavonia),

Name of River or Estuary.	Total Length in English Miles.	Direct Length of Basin in English Miles.	Area of Basin in Square Miles.	Capitals of States and Provinces in each Basin.
Basins inclined to the Black Sea (continued).				
Danube (*cont.*)				vonia), Grätz (Styria), Brünn (Moravia), Innsbrück (Tyrol), MUNICH (Bavaria), Salzburg, Temesvar (Banat and Servia).
Dniester, . .	500	400	27,300	Kamienetz (Podolia), Kichenev (Bessarabia).
Dnieper and Bug,	..	640	195,500	Kherson, Ekaterinoslav, Kiev, Mogilev Smolensk, Poltava, Tchernigov, Koursk, Jitomir (Volhynia), Minsk.
Don, . .	995	500	176,500	Tcherkask (Don Cossacks), Stavropol, Kharkov, Veronej.
Kuban, . .	380	280	..	Ekaterinodar (Black Sea Cossacks).
7.—Basins inclined to the Caspian.				
Volga, . .	2400	1080	527,000	Astrakhan, Saratov, Samara, Simbirsk, Kasan, Nijni-Novgorod, Kostroma, Jaroslav, Tver, Perm, Viatka, Penza, Riazan, Kaluga, Orel, Vladimir, Tambov, Moscow, Tula.
Ural, . .	1040	550	85,000	Orenburg.
Kur, . .	520	400	80,800	Tefils, Erivan, Shemakha (*all in Transcaucasia*).

13. **Lakes.**—Lakes being for the most part mere expansions of the rivers that drain them, the most natural way of treating them is to group them in the order of the river-basins to which they belong.

Clyde Basin—Loch Lomond, the largest lake in Scotland, drained by the Leven; area, 45 sq. m. *Leven*—Windermere, largest lake in England, 10 m. long; area, about 5 sq. m. *Dee*—Lake Bala, the largest in Wales, 4 m. long. *Bann*—Lough Neagh, in Ireland, the largest in the British Isles; area, 153 sq. m. *Dwina*—Kubinsköe, in Vologda, North Russia, drained by the Sukhona. *Onega*—Lakes Latcha and Voje, in Olonetz. *Vygh*—Vigo and Sego, in Olonetz. *Kem*—Kunto and Niuk, in W. of Arkhangel. *Kovdo*—Kovdo, Piavo, and Imandra, in Arkhangel. *Varanger Fiord*—Enara, drained by the Patajoki or Pasvig, in N. of Finland. *Glommen*—Lake Miösen, in S.E. of Norway. *Gotha*—Wener, in S.W. of Sweden, 2020 sq. m.; and Faemund, in E. of Norway, drained by the Clara. *Motala*—Wetter, E. of Lake Wener. *Arboga*—Mälar and Hielmar, in

the E. of Sweden. *Dal*—Siljan, in the centre of Sweden. *Indals*—Storsion, N. of Lake Siljan. *Skeleftea*—Stör and Horn, united, in N. of Sweden. *Lulea*—Stora-Lulea, in N. of Sweden. *Tornea*—Tornea, in N.W. of Sweden. *Ulea*—Ulea, in the centre of Finland. *Borgo A*—Pajani, in the S. of Finland. *Neva*—Ladoga (the largest in Europe, area, 7150 sq. m.), Saima, Orivesi, Pielis, Kuopio or Kalavesi, Ilmen, Onega, Voldozero, all in Finland and Olonetz. *Narova*—Peïpus, or Tchoudskoé, between Livonia and St Petersburg. *Pregel*—Mauer See, in East Prussia. *Vistula*—Spirding See, in East Prussia, drained by the Pische, an affluent of the Narew. *Stör*—Schwerin, in Mecklenburg-Schwerin. *Elbe*—Müritz, in Mecklenburg-Strelitz, drained by the Havel. *Rhine*—Boden See, on the Rhine; Thun and Brienz, on the Aar; Zurich and Wallenstadt, on the Limmat; Lucerne and Zug, on the Reuss; Bienne and Neuchâtel, on the Thiele: all in Switzerland. *Rhone*—Leman or Geneva, bet. Switzerland and Savoy; Annecy, in Savoy, *Po*—Garda, drained by the Mincio; Como, by the Adda; Maggiore and Lugano, by the Ticino. *Danube*—Balaton or Platten See, drained by the Sio; and Neusiedl, by the Raabnitz: both in Hungary. *Don*—Manytch, in Caucasus, drained by the Manytch. *Volga*—Seligher, in Russia, near the Valdai Hills, forming the source of the Volga.

14. **Climate.**—The climate of Europe is greatly milder than in other continents under the same latitude; but it presents striking diversities in different parts, arising mainly from the following causes:—

1st, *Its Position relative to the Atlantic.*—The prevailing winds are from the W. and S.W., and hence pass over that ocean before arriving here; acquire its temperature; become laden with its moisture; and, striking the shores of the continent, powerfully affect the climate of Western Europe. 2d, This effect is greatly increased by the warm ocean-current called *The Gulf Stream*, which, setting out from the Gulf of Mexico, at a very high temperature, proceeds along the coast of North America, crosses the Atlantic in a N.E. direction, arrives at the western shores of Europe, and imparts to them a temperature and climate greatly milder than they would otherwise possess. 3d, The *Elevation* of the land above the sea-level. 4th, The *Direction* of the slope, as indicated by the Great Water-parting of Europe (described at p. 72). 5th, The *Situation* of the several countries in regard to great mountain-chains in their vicinity. 6th, The *Latitude* of the place, or its distance from the equator. 7th, *Proximity to other peculiar Climatic Regions.*—For example, the south of Europe is considerably affected by the proximity of Africa, which renders its summer climate oppressive; while Northern Europe is continually exposed to the chilling winds of the Polar Seas and of Siberia.

Climatic Zones.—If the Northern Hemisphere be divided into six *Isothermal Zones* (viz., the Equatorial, Warm, Mild, Cool, Cold, and Polar Zones), which, as regards climate, are greatly more important

than *zones of latitude*, it will be found that no part of Europe lies within either of the *extreme* zones, that is, the Equatorial and Polar.

THE WARM ZONE, which is bounded by the isotherms of 77° and 59° Fahr., and whose average annual temperature is 68°, includes nearly all the Spanish peninsula, the islands of Corsica, Sardinia, Sicily, Malta, and Crete, all Greece, and Italy south of Rome. THE MILD ZONE, between the isotherms of 59° and 41°, and with an average annual temperature of 50° Fahr., comprises all Central Europe (including France and the British Isles), the Faröe Isles, Scandinavia and Russia south of a line drawn through Bergen, Christiania, Stockholm, Riga, Moscow, and Orenburg. THE COOL ZONE, between the isotherms of 41° and 32°, and with an average annual temperature of 36° Fahr., includes nearly all Iceland, together with a broad belt of the continent lying between the Mild Zone and a line passing through Hammerfest, the mouth of the river Tornea, Arkhangel, and Tobolsk in Siberia. THE COLD ZONE embraces all the remainder of the continent together with Spitzbergen, is bounded by the isothermal curves of 32° and 5°, and enjoys a mean annual temperature of 18° Fahr.

Rain.—The Quantity of Rain varies greatly in the different countries, but most of the variations can be traced to known laws:—

(1.) It decreases as we proceed from S. to N. At the equator, 96 inches fall in the year; in Italy, 45; England, 37; in North Germany, 22½; and at St Petersburg, 16 inches.

(2.) It decreases as we proceed from the shores of the Atlantic eastward. On the coast of Portugal, the amount is 111 inches; on the west of Ireland, 47 inches; but at London, 24 inches; Paris, 21 inches; Eastern Europe, 15 inches.

(3.) In Western Europe, and as far E. as Moscow, the rain-winds are from the S.W.; but farther E. and N. they come from the contrary direction.

(4.) In the Warm Zone it rains most in winter; in the Mild Zone, south of the Alps and Carpathians, most in autumn; in all the remainder of Europe, most in summer.

(5.) The number of rainy days decreases as we proceed from the west to the east side of the continent: thus, in Ireland (east side), rain falls on 208 days; Netherlands, 170 days; west of Scotland (Cape Wrath), 250 days; east of Scotland (Edinburgh), 165 days; whereas in the north of Germany and Gulf of Finland, it falls on 152 days; Poland, 158 days; basin of the Volga, 90 days; in the interior of Siberia, 60 days.

(6.) The number of days on which snow falls increases from south to north: thus, at Palermo, in Sicily, on 1 day; Rome and Florence, 2; Venice, 5; Milan, 10; Paris, 12; Copenhagen, 30; St Petersburg, 171 days. At Gibraltar snow is rare, and Malta is never visited by snowflakes.

The average amount of rain over all Europe is 34 inches. The rainiest localities in Europe are, Coimbra, in the valley of the Mondego, where the extraordinary amount of 118 inches falls annually; the Alps; Bretagne; Cornwall; the south of Ireland; and the north-west corner of Scotland. In regard to the *variation* from the true north of the *magnetic needle*, the whole continent, except a small part of Russia, has a W. declination, at present—while in Asia it is E.

15. **Geology.**—The following condensed epitome of the geology of Europe has been carefully prepared from the "Geological Map of Europe," edited by Sir Roderick I. Murchison and Professor Nicol, and forming Plate IV. of the new edition of Johnston's 'Physical Atlas.' *

Crystalline Strata, or Metamorphic Rocks, prevail especially in North-western Europe, where they cover the whole surface of Scandinavia and Finland, with the exception of two extensive tracts in the centre and north of Norway. The other principal localities are Scotland, N. of the Grampians; the N. and N.W. of Ireland; the centre and W. of France; Bohemia; Transylvania; the E. side of Turkey, Greece, Corsica, and Sardinia; and the great mountain-ranges of the Continent, especially the Alps, Mount Caucasus, and the Urals. Wherever crystalline strata greatly abound, they are penetrated through by GRANITIC ROCKS; as in Portugal and Galicia, Bretagne, the Grampians, the Loffoden Isles, Bohemia, basin of the Dnieper and Bug, Corsica, Sardinia, &c. TRAP ROCKS chiefly abound in Iceland, the Faröe Isles, Sky and Mull, County Antrim, Wales, Sweden, Finland, the Urals, and Lombardy; and VOLCANIC ROCKS in Naples, the Pontifical States, Sicily, Sardinia, Central France, and the Carpathians.

Lower Palæozoic Strata—containing the petrified remains of the earliest plants and animals yet discovered—occupy the two large tracts in Norway above referred to; an extensive belt S. of the G. of Finland, and a tract in the extreme S. of Sweden; the S. of Scotland, Westmoreland, nearly all Wales, and the W. of Ireland; Bretagne; large areas in Southern and Central Spain; the Julian and Carnic Alps; some parts of Bohemia; and a very long, narrow belt in the Urals, extending from the river Ural to the Arctic Ocean.

Upper Palæozoic Strata—embracing the Devonian, Carboniferous, and Permian systems—have their largest development in Russia, where they extend, without a break, from the Baltic to the Urals, and from the Arctic Ocean to Voronej, in the centre of the Don basin, and occupy another large tract in the basin of the Donetz, an affluent of the Don: they thus cover nearly a half of all Russia, but contain no coal, save along the Donetz, where mines are wrought to a considerable extent. The next most important tract occupied by this series is in the basins of the Rhine, Moselle, and Meuse, within the kingdoms of Prussia and Belgium. They are very extensively developed in the British Isles, especially in Ireland, where they cover four-fifths of the country; and in the larger island extend in a broad belt from the Firth of Forth to Devonshire (a tract which is extremely rich in the valuable minerals, coal and ironstone), and line the coast from Aberdeenshire to Caithness, extending to the Orkney Islands.

The Secondary Series, or *Mesozoic Group,* immediately overlies the

* For the Palæontology of the different geologic systems and formations, we refer the student to pages 41-52 above.

Palæozoic, but differs from it widely in the character of its fossils. It embraces the Triassic, Oolitic, and Cretaceous systems, and occupies a very large portion of the surface of Europe S. of lat. 55°; but rarely occurs N. of that parallel, except in three detached tracts in the N.E. of Russia (in the basins of the Petchora and Vychegda). In the S. of Russia it occupies extensive areas in the basins of the Ural, Volga, and Don, as well as of the Pripet and Desna, affluents of the Dnieper. In Turkey and Greece it occupies the greater part of the territory S. of the Danube and Save, and the island Candia; Southern Italy and Sicily; in Spain, a broad belt commencing at Gibraltar, and extending first N.E. and then N. to the Bay of Biscay; the W. of Portugal; the greater part of France E. of Bretagne and N. of the Gironde; nearly all Germany, from Hanover to the Danube; and more than a half of England, especially the E., centre, and S. Secondary strata also cover the Northern Carpathians, and large portions of the Alps and Pyrenees.

The **Tertiary Series**, like the Secondary, prevails almost exclusively to the S. of lat. 55°, while the Palæozoic and Crystalline strata are found chiefly in the N. of Europe. Tertiary strata extend, with few interruptions, in a broad zone, which, beginning at the North Sea and Baltic, proceeds in a S.E. direction to the Black Sea and Caspian, and extends in breadth from the Niemen to the Carpathians. In Asia they cover the immense basin of the Obi, and the equally large continental or internal basin of the Caspian. To the W. and S. of the great belt above referred to, they cover, in whole or in part, the basins of all the great rivers, as the Danube, Po, Ebro, Tagus, Garonne, Seine, and Thames—the last two including the celebrated Paris and London basins. The other localities where the Tertiaries prevail must be learned by inspecting a good geological map, as no description can convey an accurate impression of their actual position and extent. Such inspection cannot fail to result in the conviction, that Central and Southern Europe remained submerged under the ocean for many ages after the northern portion existed as dry land, and that during those ages the Black Sea and Caspian were united.

16. **Minerals.**—The mineral treasures of Europe are of the highest importance, not so much on account of the precious metals—in which it is inferior to other continents—as for the abundance and utility of its more common minerals. Our limits will only allow us to specify the principal localities where the most important minerals occur.

Metals.—*Gold* is chiefly found in the Ural and Carpathian Mountains (where more gold is obtained than in all the rest of Europe), especially at Kremnitz in Hungary, and in the Russian governments of Perm and Orenburg, where the mines yield 72,000 lb. annually. Other localities are, Transylvania, Salzburg, Piedmont, Ireland, and the sands of the Danube, Rhine, Rhone, Garonne, Tagus, and other rivers. *Mercury*, chiefly at Almaden in Spain, and at Idria in Carniola. *Silver*—British Isles (Cornwall, &c.), Germany, Hungary,

Norway, Bohemia, Transylvania, Turkey. *Copper*—Cornwall, Devonshire, Anglesea, Cork, Waterford, Ural Mountains, Hungary, Styria, Norway, Prussia, Andalucia, Pyrenees, and Chessy, near Lyon. *Tin*—Cornwall, Devonshire, Saxony, Bohemia. *Lead*—Leadhills in Scotland, Cornwall, the Sierra Nevada, the Eastern Alps, Saxony, and Bohemia. *Zinc*—Nowhere plentiful, but chiefly found in the Riesengebirge. *Cobalt*—In Germany, almost exclusively. *Antimony and Bismuth*—Rare, but chiefly in Germany. *Arsenic*—Schemnitz, in the Carpathians. *Iron*—Widely distributed, and generally wherever the coal-measures are found; but most abundant in Great Britain, the Cevennes, Vosges, Jura, Eastern Alps, Mountains of Norway, the Riesengebirge.

Precious Stones.—Diamonds in the government of Perm; jasper, chalcedony, agate, and garnets, in Scotland and Germany; topaz in the Urals, Scotland, England, Bohemia, and Saxony; the opal in Hungary; rubies in France.

Inflammable Minerals.—*Coal*—Generally wherever the Upper Palæozoic strata are found, especially in England, the S. of Scotland, Ireland, Belgium and N. of France, Germany, Prussia, Austria, S. of Russia. *Sulphur*—In volcanic regions, as the Solfataras of Naples, Sicily, Iceland. *Amber*—On the Prussian shores of the Baltic. *Petroleum*—In Wales, Italy, and Wallachia.

Mineral Salts.—*Common Salt*—In England, Germany, Hungary, Poland, Spain, Moldavia. *Brine Springs* very numerous in localities where Secondary strata prevail; Epsom Salts at Epsom in England; Borax in Hungary; Saltpetre in Spain, Naples, Hungary, and Russia; Alum in the crystalline rocks of Sweden, Norway, Britain, and in the volcanic formations of Sicily, Lipari Islands, and the Azores.

17. **Botany.**—The flora of Europe does not probably contain a single indigenous plant peculiar to itself. This striking fact is sufficiently accounted for by its geographical position; for not only is it in close proximity to Northern Africa, but the entire continent is a mere prolongation of Western Asia. Of the twenty-five Phyto-geographic Regions into which Schouw divides the vegetation of the globe (*see* p. 54), Europe embraces a portion of the first three—viz., the Arctic-Alpine, the North European, and the Mediterranean Regions.

The **Arctic-Alpine Region**, which is also called the region of *Mosses and Saxifrages*, naturally divides itself into two provinces—the Polar and Alpine; the first embracing the north polar lands of Europe, Asia, and America, between the limits of ice and the region of trees; and the second, all the higher elevations of Europe and Asia south of the polar circle, which extend from the line of perpetual congelation to the first appearance of trees. Both provinces are characterised by a profusion of lichens, mosses, and saxifrages; by the total absence of trees properly so called, though numerous shrubs, especially the willow and dwarf-birch, make their appearance in the Polar province, and junipers, alders, willows, rhododendrons, whortleberries,

and cranberries, in the Alpine. Dwarf perennial herbs, with large flowers of bright colours, are also abundant; but annual plants are rare, and tropical families are wholly wanting. The mean annual temperature of the polar provinces, which corresponds with the Cold Zone (described at p. 78), is 18° Fahr., and hence cultivation is impossible.

The **North European Region**, also called the region of the *Umbelliferæ* (mean temp. 29°—46° Fahr.), embraces the wide space between the Arctic Circle and lat. 45°—or the Mild and Cool Zones described above—being the whole of Europe and Asia N. of the Pyrenees, Alps, Black Sea, Caucasus, and Altai Mountains, not included in the former region. It is characterised by the prevalence of the natural orders Umbelliferæ, Cruciferæ, Gramineæ, Caricæ, Fungi, and Cichoraceæ. The predominant trees are the Coniferæ and Amentaceæ (or the cone-bearing and catkin-bearing families), as the fir, yew, and cypress, willow, poplar, hazel, birch, plane, alder, oak, and beech; the pastures are luxuriant, and the forest trees lose their foliage in winter.

The **Mediterranean Region**, or region of the *Labiatæ and Caryophylleæ* (mean temp. 55°—73° Fahr.), embraces all the remainder of Europe, together with Asia Minor, Syria, Africa N. of the Sahara, the Azores, and Canaries. It is specially marked by the predominance of the orders Labiatæ and Caryophyllæ; by some representatives of tropical climes, as palms, terebinths, and laurels; by many evergreen trees and shrubs; by the families of the second region becoming less numerous, their place being occupied by a greater number of woody plants; and by the existence of a winter flora. The pastures, however, are less luxuriant than in the former region, and are interspersed with copses of the heath tribe.

Food-Plants.—Among Food-Plants the *cereals* are cultivated 20° farther N. in Europe than in America; their northern limit being nearly coincident with that of the Cool Zone described under the article CLIMATE. Seven distinct species are cultivated, each of which requires a climate peculiar to itself; but the zones of territory occupied by them merge into one another like the seven colours of the rainbow, and, like the latter, preserve the same invariable sequence. Beginning at the N., the order is as follows:—Barley, rye, oats, wheat, millet, maize, and rice; the four last of which extend southward to the tropical regions. No species of grain can be brought to maturity in Iceland; but barley grows in the Faröe Isles, and on the continent as far N. as Hammerfest and the mouth of the White Sea. Rye is largely cultivated in the N. of Europe, especially in Russia, Germany, and part of France, where it forms the principal food of the people; and it is estimated that it sustains one-third of the population of Europe. Oats are extensively grown in Scotland, Norway, Sweden, Russia, and other places between the lat. of Paris and 65° N. Wheat extends over a very wide area—from lat. 64° in Norway to the tropic of Capricorn; in Great Britain it is grown with advantage as far north as the Moray Firth; millet is raised in Bretagne, Tuscany, and a few other localities S. of lat. 45°; maize in Eastern and Southern Europe, especially Hungary, Spain, and N. Italy. Few European countries afford the requisite heat and moisture for the successful

cultivation of rice; but it is grown in Spain, Greece, and Italy. Of *other food-plants* grown in Europe, the principal are the potato, cabbage, turnip, buckwheat, the sweet potato, and the various leguminous plants, as pease, beans, lentils, and carobs or St John's bread. The potato can be raised at a considerably higher latitude than any of the cereals, and it forms the highly-relished food of millions of the people from Iceland to Greece. *Fruit Trees* are numerous, especially to the S. of the Alps and Pyrenees. The vine extends N. to lat 50°—53°, but the best wines are produced between 30° and 45°. Farther north its place is in a great measure supplied by the various kinds of orchard fruits, as apples, pears, cherries, plums, and walnuts; and in still higher latitudes by the gooseberry, currant, rasp, and strawberry, and by malt liquors. The principal fruit-trees—figs, almonds, pomegranates, olives, lemons, oranges, peaches, apricots, mulberries, citrons, stone-pines, and date palms—are confined to the Warm Zone (p. 78).

18. **Zoology.**—The Fauna of the globe is usually classified into six zoological kingdoms, and subdivided into fourteen provinces, of which one kingdom, including three provinces, embraces all the animals belonging to this continent. The three provinces referred to are the *Northern, Middle, and Southern*, the respective limits of which harmonise pretty closely with those of the three botanical regions described at p. 81. The Isotherm of 41° divides the northern from the central province, and the latter is separated from the southern by the Pyrenees and Alps.

The following table presents a synopsis of the Fauna of Europe as presently known—its Mammals, Birds and Reptiles—the first column showing the name of the order; the second, the total number of species; the third, the total European species; the fourth, fifth, and sixth, the numbers found in the Northern, Central, and Southern provinces respectively.

ORDERS.	Total Number of Species.	Total European Spec.	N.	C.	S.
EUROPEAN MAMMALS.					
Quadrumana (Four-handed), . . .	202	1	...	...	1
Carnivora (Flesh-eating), . . .	528	119	41	46	42
Marsupialia (Pouched Animals), . .	123	...	...	...	...
Rodentia (Gnawing Animals), . . .	604	61	16	22	16
Edentata (Toothless Animals), . .	28	...	...	...	...
Pachydermata (Thick-skinned), . .	39	1	...	1	1
Ruminantia (Ruminating), . . .	180	17	4	9	9
Cetacea (Ocean-living), ...	75	24	...	...	...
Total number of Species, . .	1779	223	61	78	69

ORDERS.	Total Number of Species.	Total European Spec.	N.	C.	S.
EUROPEAN BIRDS.					
Rapaces (Birds of Prey), ...	...	54	28	37	41
Scansores (Climbers), ...	...	23	12	14	21
Oscines (Songsters), ...	...	186	70	123	120
Gallinaceæ (Gallinaceous Birds), . .	...	28	6	21	21
Grallatores (Waders), ...	...	87	32	57	54
Natatores (Swimmers), ...	...	112	64	54	37
Total number of Species, . .	6226	490	212	305	294
EUROPEAN REPTILES.					
Testudines (Tortoises), ...	69	6	...	2	5
Sauria (Lizards), ...	203	29	2	12	20
Ophidia (Serpents), ...	265	15	3	8	15
Batrachia (Frogs), ...	120	23	5	9	11
Total number of Species, . .	657	73	10	31	51

Mammals.—It will be seen from the above that while the entire number of European MAMMALS is comparatively small, two orders—the *Pouched* and *Toothless*—are entirely absent; while other two—the *Four-handed* and *Thick-skinned*—are each represented by one solitary species—viz., the Barbary Ape, a Quadrumanous animal inhabiting the rock of Gibraltar, and the wild boar, a denizen of Central and Southern Europe. Of the remaining orders, that of the *Carnivora* is by far the most important, not merely on account of the great number of species it contains, but also because most of them are hostile to man, and have in all ages been the objects of his pursuit,—either on account of the dangers to which they subject him, or the commercial value of their skins and other products. The order is represented in Europe by five families, the names and principal species of which are the following:—The Cheiroptera or bat family, including the common, the horse-shoe, and the bull-dog bat; the Insectivora, or hedgehogs, shrews, desmans, and moles; the Plantigrada, or bears, badgers, and gluttons; the Digitigrada, or polecat, ermine, weasel, and beech-marten, dog, wolf, fox, jackal, and civet, the lynx, and wildcat (the lion and tiger are nowhere found in Europe); the Pinnipedia or Amphibia, or the otter, common seal, and walrus. The *Rodentia* embrace the squirrel, beaver, rat, mouse, dormouse, hamster, mole, water-rat, vole, and lemming, porcupine, hare, rabbit, and the pigmy lagomys. The *Ruminantia* are represented by the camel, deer, reindeer, elk, antelope, rock-goat, wild sheep, and buffalo. The *Cetacea* include the common Greenland whale, the great northern rorqual, the spermaceti whale, narwhal, sea-unicorn, porpoise, and common grampus.

Birds.—Europe contains a greater number of birds than any other zoological kingdom, with the exception of Tropical America. The fol-

lowing are the principal species in each of the six orders: *Birds of Prey* comprise vultures, hawks, and owls. *Climbers* include swifts, goatsuckers, cuckoos, woodpeckers, kingfishers, and hoopoes. *Songsters*—the nightingale, blackbird, thrush, linnet, and goldfinch. *Gallinaceous Birds*—the pigeon, capercailzie, red-grouse (the only species of bird peculiar to the British Isles), ptarmigan, partridge, and pheasant. *Wading Birds*—storks, herons, snipes, plovers, cranes, rails, bustards, runners, and flamingoes. *Swimmers*—the duck, swan, goose, grebe, loon, auk, and tern.

Reptiles.—European reptiles are all of insignificant size as compared with the gigantic crocodiles, alligators, and boas of the other zoological provinces. Only six species of *Tortoise* are found, and these are nearly confined to the islands of the Mediterranean; but the marsh tortoise is found as far N. as the middle of Germany, the leathery tortoise on both sides of the English Channel, and the hawk's-bill turtle, according to Dr Fleming, in Shetland. The *Lizards* comprise the chameleon, gecko, iguana, true lizard, and skink—the last two of which are found in the British Isles. *Serpents* are very few in number, and include only two venomous species, both of which belong to the genus viper. All the really formidable species are unknown in this continent. There are twenty-three species of *Frogs*, of which eight are found in the British Isles. They are found in higher latitudes than any other order of reptiles, extending as far north as the head of the Gulf of Bothnia. The European species comprise true frogs, tritons, and newts.

19. **Ethnography.**—I. RACES.—The people of Europe belong to two distinct Races—the Caucasian and the Mongolian.

The **Caucasian Race**, which is by far the most numerous, derives its name from the region of the Caucasus and Armenia, the ancient centre from which all the existing varieties of men have sprung. This region is situated in the centre of the Old World, and in the North Temperate Zone; is surrounded by the Black Sea, the Caspian, the Red Sea, and Mediterranean; is connected by its noble rivers with the Persian Gulf and Indian Ocean; enjoys a climate of rare salubrity, a soil of great richness, and a vegetation of almost unrivalled luxuriance. Its inhabitants have ever constituted the highest type of humanity, and near it were located all the most illustrious nations of ancient and modern times. The Caucasian race now extends from Iceland and the Atlantic to the Ganges and Brahmaputra, and from the Arctic Circle to the Tropic of Cancer: it embraces Europe, South-Western Asia, and the North of Africa, and comprehends the greater part of the posterity of Japheth and Shem.

The **Mongolian Race** consists of the remaining tribes of the two great families now mentioned: they people all the remainder of Asia, together with certain isolated localities of Europe, which they entered at a much later period, and generally in the character of wandering hordes. The following are the principal Mongolian tribes that belong to this continent:—The FINNS (including the Finns Proper, Lapps, Quänians, Esthonians, Woguls, Permians, Tchuwasches, Mordwins, and Tcheremesses), extending from the Ural Mountains to the Gulf of Bothnia and the river Niemen; the SAMOIEDES between the White Sea and the river Kara: the MAGYARS or

Hungarians, in Hungary, allied in form and language to the Finns; the TARTARS, inhabiting the region north of the Black Sea and river Kuban; the KALMUCKS, N. of Mount Caucasus, and between the mouths of the Volga and Don; and the TURKS, in Rumelia, who form a connecting-link between the Mongolian and Caucasian races, more closely allied to the Tartar branch in appearance, but to the Caucasians in language.

II. LANGUAGES.—All the languages presently spoken in Europe belong to two great families—the Indo-European and Finno-Tartarian. Nations belonging to the Caucasian race speak the former, those of Mongolian origin the latter. The Indo-European tongues spoken in Europe are subdivided into four groups or classes—viz., the Celtic in the W.; the Teutonic, in the N. and N.W.; the Greco-Latin, in the S.; and the Sclavonic, in the centre and E. All these, together with the remaining branches of the Indo-European family presently spoken in Asia, are derived from the Sanscrit, an ancient, copious, and highly-refined language, spoken at a very remote period by a Japhetic nation who invaded India from the north-west, driving the original inhabitants either to the extreme south of the peninsula, or to the mountain-fastnesses of the interior, where they continue to speak their original barbarous tongues. The original seat of these invaders has not been definitely ascertained; but a kindred tribe, who spoke the closely-allied Zend language, were the earliest inhabitants of Bactria (*Persia*); and both were probably nearly allied to the ancestors of the Celts, Teutons, Sclaves, and Hellenes, who, before the dawn of history, penetrated into Europe in separate bodies and at diverse times—thus originating the four groups of languages above enumerated. All these languages are polysyllabic, highly inflexional, systematically refined, copious in their vocabulary, phonetic (not ideographic) when written, are read from left to right, and bear many other indications of a common origin.

Celtic Languages.—Of the four groups now enumerated, the Celtic appears to be the most ancient. It differs very considerably from the Sanscrit, and more from each of the other three groups than they differ from each other. Celtic nations formed the vanguard of the great Japhetic army that, before the dawn of history, migrated westward, and became the earliest inhabitants of Europe. For the most part they entered that continent on the north side of the Mediterranean; ascended the Danube and Save; settled in Illyria, the Tyrol, Switzerland, Belgium, France, and the British Isles; though some of their number migrated westward along the south side of the Mediterranean, and entered Spain by the Strait of Gibraltar. This migration occupied many centuries, and before it was concluded the main body became divided into two great sections

(the *Gael* and the *Kymri*), who, in the course of ages, came to speak languages unintelligible to each other, though closely allied both glossarially and grammatically. These are the Gaelic and the Kymric; each of which, in the course of time, branched off into three dialects (p. 106):—

Gaelic or *Erse Branch*, including
Irish, spoken in Ireland.
Scottish Gaelic, in North and West of Scotland.
Manx, in Isle of Man.

Kymric Branch, or *Ancient British*:
Welsh, in the principality of Wales.
Cornish, in Cornwall (now extinct).
Breton or Armoric, in Bretagne.

Ancient Localities.—Though the Celtic languages are now confined to the British Isles and the north-western corner of France, they were spoken at one time over a large portion of Europe. At the commencement of the Christian era, Celtic and Gothic nations divided all Western Europe between them; and were separated from each other by the Rhine, which still, in a great measure, forms the boundary between the races, though not between the languages. For a lengthened period both branches of the Celtic have been disappearing before the more highly cultivated English and French. Yet they are highly expressive and euphonious tongues; they come down to us as monuments of the most remote antiquity, and of late have become objects of the deepest interest to philologists, who discover in them most precious materials for illustrating the science of comparative grammar. From five to six millions of persons presently speak dialects of Celtic—viz. Irish, 3,000,000 at home, and 1,000,000 abroad; Scottish Gaelic, 400,000 in Scotland, and 100,000 in the colonies; Welsh, 700,000 in Wales, and 50,000 in the cities of England; Armoric, 800,000 in France.

Physiological and Intellectual Character.—The pure Celt is of middle size and slender make; sallow complexion; black hair, rarely curled, but turning grey at an early age; grey or dark-brown eyes; face and upper part of the skull oval; chest narrow; legs slightly curved inwards; feet small; temperament bilious, or bilious-nervous. Quick in perception, with great powers of combination and application; sensitive, proud, irascible, but easily calmed; fond of equality, society, and military glory; polite, hospitable, brave, but superstitious; incautious and imprudent.

Teutonic Languages.—These have all a close resemblance to each other, both in their roots and inflexions, and are intimately allied to the Sanscrit. Anciently they were highly inflexional, like the Greco-Latin family, but now employ auxiliaries for the conjugation of verbs and prepositions for the inflexions of nouns. Though not so plastic as the Greek, or even the Sclavonic tongues, they are bold, vigorous, and capable of expressing all shades of thought. We first find Teutonic nations in the region S. of the Caspian Sea in the eighth century before Christ. It was to this region that the ten Israelitish tribes were transported by the King of Assyria, B.C. 721. In all likelihood the two peoples amalgamated. Then commenced their great migration westward, so ably delineated by Sharon Turner in

his 'History of the Anglo-Saxons.' Possessed of indomitable energy and force of character, the Teutonic nations either subjugated or drove before them such Celtic tribes as they came in contact with. In the fourth century they overthrew the great Roman Empire, and they have almost invariably been able to retain possession of the territories they have once acquired. Their deep and patient reflection has led to the most important inventions and sublimest discoveries of modern times, as the watch, gun, steam-engine, art of printing, and the law of gravitation; and to this race belong the brightest names of modern science and literature, as Newton, Milton, Shakespeare, Bacon, Luther, Goethe, Humboldt, and Liebig. The Teutonic languages, like the Celtic, branch off into two main sections.

German Branch, including
German, in Germany, Switzerland, and United States.
Dutch, in the Netherlands and Cape Colony.
Flemish, in the North of Belgium and N. Brabant.
English, in British Isles. British Colonies, and United States.

Scandinavian Branch, including
Icelandic, in Iceland.
Farŏese, in the Farŏe Isles.
Norse, in Norway and Denmark.
Swedish, in Sweden.
Scotch, in Lowlands of Scotland.

Extinct Languages of this Class.—Gothic, Alemannic, Old Saxon, and Anglo-Saxon, the last of which is the parent and basis of the modern English.

Ancient Localities.—Media, Germany, between the Rhine and Elbe; the southern part of Scandinavia; Bulgaria and Servia. The Teutonic tribes that most distinguished themselves in the Middle Ages were, the Franks, Burgundians, Alemans, and Visi-Goths, in Gaul; Goths, Longobards, and Heruli, in Italy; Vandals and Ostro-Goths, in Spain; Angles, Jutes, and Saxons, in England.

Physiological Character.—Above middle size, and disposed to corpulency; chest broad; bones thick; legs straight; feet often large and clumsy; great strength of muscle; fair complexion, with flaxen, reddish, or golden-coloured hair; large blue eyes; ruddy cheeks; broad, high brow; skull larger and rounder than the Celtic variety; temperament sanguine and phlegmatic.

Intellectual and Moral Character.—Slow but accurate in perception; great depth and penetration of mind, but not so sparkling and brilliant as the Celt; strong desire for personal independence and political self-government; cautious, reserved, and provident; hospitable, but not very sociable; fond of titles and social distinctions; haughty, overbearing disposition, and reckless of the rights of other nations; sincere: forgetful of injuries; skilful seamen; fond of spirituous liquors; great musical talent.

Sclavonic Languages.—This family of languages belongs to the centre and east of Europe. With the exception of Hungary, Moldavia, and Wallachia, they extend without interruption from the

Black Sea to the Baltic, and from the Adriatic to the Yenisei; they occupy more than a third part of Europe, and are spoken by about 70,000,000 of people. Though not *immediately* derived from the Sanscrit, they bear to it a very close affinity, and resemble it more nearly than any other Indo-European family, except the Greco-Latin and Indian branches. They are distinguished by the richness of their vocabulary, by their great abundance of synonyms, and by their numerous inflexions, which are placed both at the beginning and end of words. The last-mentioned property imparts to them a great facility of creating from each radical an extraordinary number of derivatives; from native roots they easily form all those technical and scientific terms which the languages of Western Europe derive from the Greek and Latin. In the number of their declensions, tenses, and participles, they excel all other European languages; and they possess such expressiveness and energy that they are capable of representing every object of the imagination in a manner not inferior to the most highly-cultivated modern tongues. The inferior estimate usually formed of their euphony and sonorousness mainly arises from the attempt to express in Roman letters sounds that are wholly peculiar to the Sclavonic languages. Like the two former families, the Sclavonic tongues are arranged under two branches.

South-Eastern Branch, including

Russian, in the great plain of North-Eastern Europe.
Russniak, in Galicia, Hungary, Volhynia, Podolia.
Bulgarian, Servian, Dalmatian, Croatian, Bosnian—all in the basin of the Lower Danube, and on the Drave and Save.
Wendish, middle of Lower Germany.

North-Western Branch—

Polish, in Poland, on the Vistula and Niemen.
Bohemian, or Tchekhian, in Bohemia and Moravia.
Slowak, chiefly in the north-west of Hungary.
Lettish, on the Baltic coast, between the Niemen and Lake Peïpus.
Lithuanian, in Wilna, Grodno, Minsk, and Smolensk.

Ancient Localities.—The early history of the Sclavic nations is involved in much obscurity. They probably left the banks of the Ganges in the seventh or eighth century before the Christian era. The early Greek and Roman historians frequently mention them under the names of *Slavi*, *Antæ*, *Vandals*, *Veneti*, and *Vends*, all of whom were descendants of the ancient Sarmatæ. In the sixth century of our era they began to ascend the basin of the Danube, and to form settlements on both sides of that river: since then they are frequently mentioned by the Byzantine historians as performing an important part in European history.

Physiological Character.—In stature stout, broad, and squat-built; neck short and thick; hardy in constitution, with strong bones and straight muscular limbs; complexion sallow, forming a mean between the Gothic and Celtic races; eyes grey or hazel-brown, and deeply set in the head; hair bristly, dark, of different shades, and rarely curled; skull and face square and angular; cheek-bones prominent; brow low, and the hair growing far down on it; temperament phlegmatic, or sanguine-bilious.

Intellectual and Moral Character.—Great mechanical, musical, and imitative talent; frank and open when in the enjoyment of freedom, but cunning, deceitful, and revengeful when subjected; their statesmen become admirable diplomatists; originally leading a nomadic life, they are still attached to the patriarchal form of government; blindly obedient to their sovereign, who is regarded as a father; extremely tenacious of the manners and prejudices of their ancestors. They are further characterised by a want of cleanliness; by their love of lyrical, and especially elegiac, song; and above all, by their invincible hatred of the Teutonic race, who have oppressed them for a thousand years, as well as by their long-cherished aspirations after Pansclavism.

Greco-Latin Languages.—These comprehend all the languages derived from the ancient classical tongues of Greece and Rome. They are spoken over the entire south of Europe, from the Atlantic to the Dniester, and from the southern limits of Germany to the Mediterranean—with the exception of the northern portion of the Hellenic peninsula, the Basque Provinces, and Bretagne. All the larger islands of the Mediterranean, except Malta, are peopled by nations speaking Greco-Latin tongues. The origin of the Greeks and Latins, in common with that of the Celts, Goths, and Sclaves, is lost in the darkness of the pre-historic period. Modern ethnographic science, however, leaves little doubt that the two nations referred to were, respectively, the earliest inhabitants of Greece and Italy; that they stood to each other in the closest affinity, both of them being the immediate descendants of the Pelasgi, who appear to have formed the first great wave of population that broke on the shores of south-eastern Europe, and that permanently covered Asia Minor, Thrace, Macedonia, Greece, and Italy. This migration probably took place about 2000 B.C., but was succeeded by numerous similar migrations of the same stock of nations (including the Hellenes, who were no doubt nearly allied to, if not identical with, the Pelasgi) down to 1350 B.C. In subsequent centuries other great bodies of colonists appear to have entered Europe from other parts of Asia, forming the ancestors of the Celtic, Teutonic, and Sclavonic nations; but the Pelasgi formed, from the very first, the great bulk of the population of Italy and Greece. The part of Asia from which the Pelasgi set out appears to have been Northern India; for the Sanscrit, the ancient and sacred language of India, has a marked and very decided affinity to both Greek and Latin. The Greek, especially, is more closely allied to the Sanscrit than any other European tongue. In some respects, however, the Latin surpasses the Greek in retaining the features of its venerable parent, and it is in no way to be regarded as a descendant, far less a corruption, of the language of Greece. They are sister-tongues, deriving from their common parent every feature in which they resemble each other; but exhibiting many differences, arising from the different fortunes of each.*

* For the precise relation in which the two ancient classical tongues stand to each other, we may refer to Bopp's 'Comparative Grammar of the Indo-European Languages;' to Latham, 'On the English Language;' and (what is more interesting and satisfactory than either) to the article "Language" in the 'Penny Cyclopædia.'

Greek, or Eastern Branch—
Ancient Greek—Spoken in Greece from the earliest times, and afterwards in numerous other countries.
Modern Greek or Romaic—Greece, the Archipelago, and parts of the Turkish Empire.
Latin, or Western Branch—
Ancient Latin—Now a dead language, was the original language of Italy, and afterwards spread over the greater part of the Roman Empire.
Italian—Italy, part of Switzerland, Corsica, Sardinia, Sicily, &c.
Spanish—Spain, *Canaries, Cuba, Mexico, Spanish America, Philippine Isles*, &c.
Portuguese—Portugal, Madeira, Azores, *Brazil*, &c.
French—France, Channel Isles, parts of Belgium and Switzerland, *Lower Canada, Louisiana, Algeria, W. Indies, French Guiana.*
Wallachian—Wallachia, Moldavia, Bessarabia, Transylvania.
Thraco-Illyrian Branch, viz.—
Albanian or Arnaute—The eastern coast of the Adriatic, especially Albania, Servia, and Dalmatia; but of doubtful position here.

Ancient Localities.—No other language, ancient or modern, has been so widely diffused as the Greek, except Arabic and English. Greece, Asia Minor, Macedonia, Thessaly, and Epirus were its earliest seats: it was diffused by the early Greek colonies along both sides of the Mediterranean, as Cyrene, Syracuse, Tarentum, and Smyrna; was extended by Alexander and his successors to a large portion of Western Asia, including Asia Minor, Syria, and the cities of Palestine; and was spoken in many parts of Egypt under the Ptolemies. The conquest of Greece by the Romans, B.C. 146, tended still further to its diffusion, while under the Cæsars it was more extensively cultivated than at any former time. After the fall of the Western Empire, and the extinction of learning in the West, Greek literature and philosophy found an asylum in Constantinople, till that city was taken by the Turks, A.D. 1453; at which time it ceased to be spoken in its purity anywhere. It still, however, remained a living language in its original home; and even to this day the modern Greeks can peruse with comparative ease the productions of Homer, Xenophon, and Demosthenes. In short, it has remained a living language for the astonishing period of 3000 years. The Latin, in like manner, was the principal language of Italy from the earliest times. As the Roman power extended, it became more and more widely diffused, in many cases mingling with and remoulding the dialects of the conquered nations, and thus originating the modern languages of Southern Europe. After the fall of the Roman Empire it ceased to be a spoken language, but during the lengthened period of the middle ages it continued to maintain its supremacy as the language of literature, philosophy, legislation, and religion. Since the establishment of the papal hierarchy to the present day, it has maintained its place as the liturgical language of the Romish Church; and it is still extensively cultivated by every civilised nation, on account of the treasures contained in the vast repositories of its literature.

Modern Languages belonging to this Stock.—The Romaic differs little more from ancient Greek than some of the dialects of that language differed from each other; and the changes that have arisen are more perceptible in the grammar than in the vocabulary. The main differences now existing between the various languages of the Roman branch arise

mainly from the different character of the languages spoken in these localities before the Latin was engrafted on the original stock. Italian, Spanish, and French have diverged from the parent stem far more widely than the Romaic from the ancient Greek. The French has effected the widest separation, and the Italian and Spanish the least; while the Portuguese may be regarded as almost a *dialect* of the Spanish, the two languages being radically identical. Though the basis of the Wallachian is altered Latin, about one-half of its words are derived from Greek, Turkish, and Sclavonian sources. The Albanian is so different from every other member of this family that it seems doubtful whether it can claim a place among them. It contains the remains of a language now long extinct, but which probably formed a connecting-link between various families of tongues, more especially between the Greco-Latin and Sclavonic.

III. Religions of Europe.—These, though extremely numerous, may all be reduced to three classes, which harmonise in a very remarkable manner with the races and groups of languages above described. The Caucasian race are Christians; the Mongolian race, Heathens; while the Turks, who form a connecting-link between these races, profess Mohammedanism—a religion which equally connects Christianity with Paganism; and what is still more remarkable, Teutonic nations have embraced Protestantism—that is, Christianity reformed from the abuses of centuries; the Celtic and Greco-Latin nations profess Catholicism; while those speaking Sclavonic tongues belong to the Greek Church.

To the latter generalisation, however, there are some important exceptions; because language does not strike so deeply into the roots of humanity as race does. Language shares in the fortunes of the nation that speaks it, and is subject to numberless vicissitudes; while the stamp derived from race remains indelible for ages. Accordingly we find considerable sections of the Celtic nations becoming Protestants, as the Scottish Gael and the Welsh; Austria, though speaking a Teutonic language, largely professes Catholicism; the Magyars, a Mongolian race, and speaking a Mongolian language, are to a large extent Protestants; and the inhabitants of Greece, instead of belonging to the Roman Catholic, are stanch adherents of the Greek Church. The following table shows the estimated numbers belonging at present to the different races and religious denominations of Europe:—

Race.		Religion.	
Celtic, pure and mixed	30,000,000	Roman Catholic	140,000,000
Teutonic do.	103,000,000	Greek Church	68,000,000
Sclavonic do.	72,000,000	Protestant	68,500,000
Mongolian and Tartar	28,000,000	Mohammedan & Heathen	6,000,000
Jewish	4,400,000	Jews	4,400,000
Gypsies, &c.	1,249,000	Gypsies, &c.	1,149,000
Total of Europe,	288,649,000		288,649,000

THE BRITISH EMPIRE.

THE British Empire is the largest, the most powerful, and, with one exception, the most populous on the surface of the earth. In extent of territory it even exceeds the Russian Empire; in point of population it is second only to the Chinese; while in wealth, civilisation, and moral influence, it has no rival. Its magnitude, however, will be more easily realised by comparing it with the other largest states in both hemispheres. According to the most recent statistics, the dates of which are given in detail in the following table, the area of the British Empire, including the Protected States of India, amounts to 8,617,620 sq. miles, and the population to 283,037,240. The next largest empire is that of Russia, which has an area of nearly 8,000,000 sq. m., and a population of 83,260,000; the area of the Chinese Empire is estimated at 4,423,000 sq. m., and the population at 425,000,000; while the fourth in size is the United States of America, with an area (including Alaska) of 3,603,811 sq. m., and a population (in 1870) of 38,925,598. If we include the Tributary States of India, the Empire embraces a full sixth of the land surface of the globe, and a fifth of the human race.

TABLE OF BRITISH POSSESSIONS.

Name.	Capital.	Area in English sq. m.	Population in 1871.
British Isles or United Kingdom,	London	122,550	31,817,108
Heligoland,		5	1,913
Gibraltar,		2	25,216
Malta,	Valetta	142	149,084
Total in Europe,		122,699	31,993,321
Aden and Perim,		20	29,730
British India (1872),	Calcutta	904,049	190,563,048
Protected States,	Haidarabad, &c.	546,695	48,267,900
Straits Settlements,	Singapore	1,206	308,097
Ceylon,	Colombo	24,454	2,405,287
Hong Kong,	Victoria	32	124,198
Labuan,		45	4,898
Total in Asia,		1,476,501	241,703,158

Name.	Capital.	Area in English sq. m.	Population in 1871.
Gambia,	Bathurst	21	14,190
Sierra Leone,	Freetown	468	38,681
Gold Coast and Lagos,	Lagos	11,000	582,091
Cape Colony, including British Kafraria, Basutuland, Griqualand West, 1875,	Capetown	218,410	720,000
Natal,	Pietermaritzburg	11,172	293,832
Mauritius, Amirantes, Seychelles, &c.	Port-Louis, &c.	708	330,460
St Helena and Ascension,	Jamestown, &c.	82	6,268
Total in Africa,		241,861	1,985,522
Dominion of Canada—Canada, Nova Scotia, New Brunswick, Prince Edward Island, British Columbia, Manitoba, and N. W. Territory,	Ottawa	3,513,325	3,718,745
Newfoundland,	St John's	40,200	146,536
Bermudas,	Hamilton	24	15,309
British Honduras,	Balize	13,500	24,710
West India Islands,	Spanish Town, &c.	13,109	1,061,040
British Guiana,	George Town	76,000	193,491
Falkland Isles,	Stanley Harbour	6,600	803
Total in America,		3,662,758	5,160,634
New South Wales (1874),	Sydney	323,437	503,981
Victoria (1874),	Melbourne	86,831	729,868
South Australia (1874),	Adelaide	383,328	188,995
West Australia (1874),	Perth	978,000	24,785
Queensland (1874),	Brisbane	678,000	160,000
North Australia (uncolonised),		523,531	
Tasmania (1874),	Hobart Town	26,215	98,455
New Zealand (1874),	Wellington	106,259	340,000
Aukland & Norfolk Isles,		166	481
Fiji Isles,		8,034	148,040
Total in Oceania,		3,113,801	2,194,605
Total British Empire,		8,617,620	283,037,240

GENERAL VIEW OF THE BRITISH ISLES.

Position and Boundaries.—The British Isles, or United Kingdom of Great Britain and Ireland, form an extensive archipelago in the North Atlantic Ocean, at a small distance from the western shores of Central Europe, from which it is separated by the North Sea, the Strait of Dover, and the English Channel. It consists of two large islands—Great Britain and Ireland—and of about 5500 smaller islands and rocks. Of these, 500 are contiguous to Great Britain, and 5000 to Ireland. At the date of the last general census, only 420 of them were found inhabited—175 of which were adjacent to Great Britain, and 245 to Ireland.

Form.—The general outline is very irregular; but omitting the Shetland, Norman, and Scilly Isles, it approximates to the form of a scalene triangle, with its longest side turned to the east, and its shortest to the south. The group, as a whole, is broken up into a number of smaller ones, which arrange themselves, either singly or in clusters, around the larger islands. Thus, Great Britain is surrounded by the Orkney and Shetland Isles, the Outer and Inner Hebrides, Bute and Arran, Isle of Man, Anglesea, Scilly Isles, and Isle of Wight; while Ireland is in like manner accompanied by Rathlin Island, Torry Island, Arranmore, Achil Island, Clare Island, Valencia, and Cape Clear. The east coast of Great Britain is singularly destitute of Islands; and the arrangement into clusters is more characteristic of the British than of the Irish Islands.

Area and Dimensions.—Situated between 49° 13′ and 60° 49′ N., and between 1° 45′ E. and 10° 32′ W. lon., the entire archipelago occupies 11¼° of lat. and 12¼° lon. The trapezium formed by the parallels and meridians that pass through its extreme points is thus 800 miles long, from north to south, with an average breadth of 490 miles. The square content of this trapezium is about 392,000 square miles, but more than two-thirds of it is covered with water; and the actual area of the land is only 122,550 square miles, or $\frac{1}{19}$ of the area of continental Europe. Great Britain is the largest island in Europe, and the seventh largest in the world, being only exceeded by Australia, Borneo, Papua, Sumatra, Niphon, and Madagascar. Its length is 608 miles, breadth 280; area 83,826 sq. miles, or, including the adjacent islands, 90,038 sq. miles = 56,000,000 imperial acres, or $\frac{1}{17}$ part of Europe.

Extreme Points.—Unst, in Shetland, is the most northern part of the British archipelago; Jersey, in the Channel Isles, the most southern; Lowestoft Ness, in Suffolk, the most eastern; and Blasket I., in Kerry, the most western.

The longest day in Jersey is three hours shorter than in Shetland,

where, at the summer solstice, it is 19 hours long. Here a bright twilight continues all night, and books of a small type may be easily read at midnight. The sun rises on the E. coast of England 49 minutes earlier than on the W. coast of Ireland. Greenwich time, therefore, which is now followed on all the railways of Great Britain, would be greatly at fault if extended to the sister island.

Comparative Position.—The parallel of latitude which passes through Unst, in the extreme N. of the archipelago, proceeds *eastward* through Christiania, Stockholm, St Petersburg, and Yakutsk; and *westward* across C. Farewell in Greenland, and Mount St Elias in Alaska; the parallel of Jersey in the extreme S. proceeds eastward to Paris and Vienna; and westward along the northern boundary of the United States: while the central parallel of 55° passes over Londonderry, Newcastle, Copenhagen, Moscow, Tomsk, and Nain in Labrador. The central meridian (of 4° 23′ W.) runs considerably to the east of the Farŏe group, through Anglesea and Cornwall, between Brest and Madrid, and 1° E. of Gibraltar.

Population.—In 1801, the year of our first regular census, the population of the British Isles amounted to 15,942,646. By the census of 1871, the population amounted to 31,817,108, being one-tenth of the population of Europe, or 259 persons to each sq. m. Thus, while in the United States the population doubles itself in 25 years, in the United Kingdom it scarcely doubles itself in 70 years. This comparatively slow rate of increase arises from various causes, the principal of which have been emigration and famine. In the year last named, the population of England was 22,704,108; that of Scotland, 3,360,018; and that of Ireland, 5,402,759.

An immense tide of emigration is constantly leaving our shores. In 1867 there emigrated from the British Isles, 195,953—or 537 per day. Of these, 159,000 went to the United States, 14,000 to Australia, and 15,500 to British America. Since the year 1815, the number of emigrants from the United Kingdom has amounted to 6,302,345; while in the ten years 1858-67, it averaged 162,000 per annum. The destruction of the potato crop in 1846-7, and the consequent famine in Ireland and the Highlands of Scotland, had a mighty effect in reducing the population. In Ireland alone it is estimated that 1,000,000 of the people died of famine and disease in two years, while a million more emigrated. In Great Britain alone the population has more than doubled during the last half-century. In 1801 it was 10,578,000, including the adjacent islands; it is now 26,062,721. This gives 289 persons to every sq. m., and 2¼ acres of land to every person. This dense population is equally divided between town and country, there being about 12½ millions in each. The number of cities, county towns, and market towns in the island is 815, of which 580 are in England and Wales, with an average population of 17,300; and 225 in Scotland, with an average population of 8000.

Climate.—As compared with other countries of the same latitude, the climate of the British Isles, though variable, is remarkably mild and salubrious. There is no country in Europe where a working man can prosecute his employment out of doors for a greater number of days in the year, or of hours in the day. Surrounded by the ocean on all sides, and having a branch of the Gulf Stream flowing

along its western shores, the mean annual temperature is greatly higher than its geographical position in the middle of the North Temperate Zone would indicate. Of the six isothermal zones into which the meteorologist divides our hemisphere—viz., the equatorial, warm, mild, cool, cold, and frigid—the United Kingdom is situated in that one which, on the whole, is most desirable.

The **Mild Zone**, which embraces the entire archipelago, is bounded by the isothermal curves of 41° and 59° Fahr., and enjoys a mean annual temperature of 49°. The mean temperature of Unst, in Shetland, is 44°.7, and of Penzance in Cornwall, 53°; thus showing a difference of mean annual temperature between the two extremities of the archipelago of 7° Fahr., and a general average for the whole of 48°.7. In no other country, either in the Old or New World, does so high a mean temperature correspond with so high a latitude. For example, Edinburgh, Moscow, and Nain in Labrador, are situated nearly on the same parallel; but while the mean temperature of Edinburgh is 47°.13, at Moscow it is 40°, and at Nain 27°.8. Hence it appears that the British Isles possess a mean temperature of 7° higher than corresponding latitudes on the eastern, and of 20° higher than corresponding latitudes on the western continent. The winter temperature is still more dissimilar, being at Edinburgh 38°.45, at Moscow 15°.2, and at Nain 8°.7. Our winter is therefore 23° Fahr. warmer than at Moscow, and 35° warmer than in the corresponding latitude of the eastern side of North America.

The **isotherm** of 50°, which nearly expresses the mean annual temperature of the British Isles, in no part of the world attains so high a latitude as in Ireland, where it ascends, in the centre of the island, nearly to the parallel of Dublin, in lat. 53° 21′. From this point it rapidly descends in its passage eastward and westward—in the former, passing near London 51° 32′, Paris 48° 50′, Vienna 48° 13′, Astrakhan 46° 15′, and Pekin 39° 53′; and in the latter, New York 41° 6′, and the mouth of the Columbia 46°. These places are, on an average, 8¼°, and one of them (Pekin) no less than 13½°, farther south than Dublin. So great, indeed, is the influence of our insular situation, of our mild westerly winds, and of the general drainage and cultivation of our soil, that the British Isles are fully as healthy as any country in the world, and our vegetation unrivalled under the same degree of latitude. Not only is our mean temperature very high, but the *range of temperature* is very small; the difference between the temperature of the hottest and coldest months being only about 24°, while at Berlin it is 38°, and at Moscow and St Petersburg no less than 57°. Hence we are exempted from those violent extremes which are so injurious to health and to animal and vegetable life. Accordingly, while in Ireland the broad-leaved myrtle grows in the open air as in Portugal, corn will not ripen in Labrador under the same latitude, and only hardy kitchen vegetables can be raised. Summer, in the British Isles, comprises the months of June, July, and August; autumn, September, October, November, and the first half of December; winter, half of December, January, February, and the half of March; and spring, the latter half of March, April, and May. July is the hottest month.

The **Prevailing Winds** are westerly for nine months of the year; but in March, April, May, and Nov. they are often easterly or northerly, and this season of the year is peculiarly trying to invalids, especially to those afflicted with consumption. The **average fall of rain** over the entire archipelago is above 40 in., but it is much greater on the W.

than on the E. coast of both Great Britain and Ireland—the mean fall of rain on the east coast of the former being 27.4 inches, and of the latter 29.7 inches; while on the west coast of the larger island it is 45.5, and of the smaller 47.4 inches. The average **number of rainy days** on the east coast is 165, and on the west 208. This great difference of climate between the E. and W. sides arises from the configuration of the land and the general prevalence of westerly winds charged with vapour from the Atlantic. These winds, striking against the colder mountain-ranges, lose their moisture and originate nearly all the principal rivers in both islands. In some parts of Westmoreland and Cumberland, as much as 100 inches of rain fall annually; at Seathwaite, in the latter county, the fall amounts to 141 inches; whereas at London, on the eastern side of the island, it is only 24, at Cambridge 20, Shields 26, Edinburgh 25, and Dublin 30.8 inches. The **limit of perpetual snow** in the S. of the archipelago is estimated at 6334 feet, on the central parallel 5034 feet, and in Shetland 3818 feet.

The mean **Height of the Barometer** at London at sea level and at 32° Fahr. is 29.956 inches, at Glasgow 29.829 inches, and in Orkney 29.791 inches. The barometric range is very great, especially in the N. of the archipelago, being in Orkney 3 inches. The *variation* or *declination of the magnetic needle* is much greater on the W. coast than on the E. At London in 1580 the needle showed an E. declination of 11° 36′; in 1663 it was at zero. From that year it gradually tended westward till it reached its maximum declination of 24° 41′ in 1818. Since then it has steadily diminished, being 22° 30′ in 1850, and 20° 16′ W. in 1868. Calculating from these data we learn that in our country the needle makes one complete oscillation of 49° 22′ in 310 years. The *dip* or *inclination* undergoes a secular variation of a similar kind. At London, in 1820, it was 70° 3′, and in 1868, 67° 54′, diminishing by about 2′.6 annually. Lastly, the magnetic intensity, which is found to increase with the latitude, is at London 1.372; at the equator, 1.087; Naples, 1.274; Paris, 1.348; St Petersburg, 1.410; Spitzbergen, 1.567.

Geology. — By far the greater part of the surface of the British Isles is occupied by sedimentary and fossiliferous strata, ranging from the Silurian to the Tertiary. Igneous and metamorphic rocks prevail mainly in Scotland—a country which is also characterised by the preponderance of Silurian strata, by the extent and importance of its newer Palæozoic rocks, embracing all the formations from the Devonian to the Permian, and by the absence, for the most part, of strata belonging to the Mesozoic and Tertiary series.

England possesses in greatest abundance those formations of which Scotland is most destitute; for while only a small portion of her surface is covered by the older Palæozoic—viz., the north-western and south-western counties—the Secondary formations are widespread and highly developed, as are also the newer Palæozoic strata, to which her unrivalled coal-fields belong. The Chalk and Tertiary series are mainly confined to the south-eastern counties, especially to the basins of the Thames and Ouse. The Oolite, Lias, and Trias occupy nearly all the remainder of the country, especially the north-eastern and central counties from the eastern frontier of

Wales to the North Sea; but the north of England, from Derby to Berwick, is covered with the Coal-measures and the Carboniferous limestone. Wales consists, for the most part, of Silurian and Devonian strata, but the Coal-measures in the south are extensive and valuable.

A most interesting circumstance connected with the geology of England and Wales, and one which will greatly facilitate the mastering of the details, is the *order* in which the different formations occur, more especially in the broadest part of the kingdom. Supposing a geologist to set out from the Cambrian rocks of the west coast of Pembrokeshire, and to travel eastward till he arrives at the Tertiary deposits of Norfolk, he will have passed in review all the systems and formations of the entire fossiliferous series, and that, too, precisely in the order in which they are arranged in geological treatises, or in which they would be seen were a complete geological section of the earth's crust presented to his view! The order would be precisely the same should he make another excursion from Berwick to London along the coast, or even in a direct line, save that a few of the lower terms of the series would be wanting. Probably there is no country in the world, of equal extent, in which a similar succession could be found.

Ireland is essentially a Palæozoic country. Carboniferous limestone covers a large portion of the surface, and the Silurian and Devonian the remainder; only that extensive tracts of trap and granite prevail along the coasts — the former covering the entire north-east of Ulster between the Lagan and Lough Foyle, and the latter the greater part of the counties Wicklow, Carlow, Galway, and Donegal. Coal is found in many places, but the workable beds are of inconsiderable extent, and the quality is commonly inferior† The geology of the British Isles presents an admirable epitome of the geology of the globe; and it has been more thoroughly investigated than any other equally extensive portion of the earth's surface. Details, however, would be out of place here, more especially after the somewhat ample consideration given to the subject at pp. 41-52; but the prevailing characteristics of the geology of each of the counties will be found briefly indicated in the "Descriptive Notes" to England, Scotland, and Ireland.*

Minerals.—The minerals of the United Kingdom are a source of immense wealth, and, both in quantity and commercial value, greatly surpass those of any other country. The chief of these are coal, iron, salt, limestone, building-stones, copper, lead, tin, silver, and zinc.

Almost every mineral, indeed, of high economic value, is found more or less extensively in the British Isles; though some of them, as, for example, gold and quicksilver, occur in such small quantities

* For further details we must refer the student to the works of Sir Roderick Murchison, Sir Charles Lyell, Mr Hugh Miller, Dr Page, and especially to the beautiful "Geological and Palæontological Map of the British Islands," edited by Dr Keith Johnston, from materials supplied by the late lamented Professor Edward Forbes, forming Plates V. and VI. of the new edition of Johnston's 'Physical Atlas.'

† But vast deposits of excellent coal were discovered near Waterford in 1872.

as scarcely to repay the labour of extracting them. *Coal* and *iron* are the two commodities that have contributed most largely to raise our country to the high eminence to which it has attained among neighbouring nations. The coal-fields are not confined to any special locality, but are distributed in all directions over both the main islands. In England they commence at Northumberland, and extend through Durham, York, Lancashire, and Staffordshire into South Wales. In Scotland they form a broad belt across the country where it is narrowest, from the coast of Ayrshire to Fife-ness—extending on the west coast from the Clyde to the Doon, and on the east from the Eden to the Tyne. Detached tracts also occur in the counties of Berwick, Roxburgh, and Dumfries. Ireland is not rich in coal. Her six coal districts are situated in the Carboniferous limestone which covers the great central plain, and do not yield more than about 55,000 tons annually.

The total area of the Coal-measures in the British Isles is estimated at about 8000 sq. m.; and it is calculated that, at the present rate of consumption (125 million tons per year), the supply will last for 1000 years. The number of collieries at work in 1873 was 4268, giving employment to 393,000 males. The value of the coal is immensely enhanced by its being associated with beds of iron ore. The ore could not be fused without the coal, nor without the aid of the mountain limestone, which acts as a flux and promotes its speedy reduction. In other countries where the coal is not associated with those other deposits—as in Silesia and France—the value of the mineral is restricted to its employment as an article of fuel.

Salt occurs chiefly in the county of Cheshire, where vast beds of rock-salt and brine-springs occur. *Limestone* is abundant in almost every part of England and Ireland; *sandstone and granite* in numerous localities in Scotland; *roofing-slate* in Wales, Cumberland and Argyllshire; and excellent *statuary marble* in Donegal and Galway. *Copper* is most abundant in Cornwall, but occurs also in Staffordshire, Anglesea, Waterford, Cork, and Kerry. *Lead* is chiefly found in Derbyshire, Wales, and in the two most northern counties of England; in the Lowther Hills in Scotland; and in the southern counties of Munster. Lead ore generally contains a small quantity of silver. *Tin* occurs only in Cornwall and Devon, where it has been worked for ages; and these mines supply about ⅓ of all the tin produced in Europe. Mines of *calamine*, or *zinc ore*, are worked in Derbyshire. *Antimony, manganese, arsenic, plumbago, fuller's earth*, and numerous other minerals, occur in various parts of the kingdom.

It is estimated that the value of the mineral productions of the United Kingdom for the year 1873 was nearly £60,000,000 sterling, more than £47,000,000 of which belong to the single article of coal, 124,600,000 tons being dug annually. The value of the iron ore for the same year was estimated at £7,573,000; of copper and lead, about £1,900,000; of tin, silver, and zinc, collectively, £1,580,000; and of other minerals, including building-stones, about £7,000,000.

Botany.—The flora of the British Isles is wholly embraced

within Schouw's *second* phyto-geographic or North European region, described above (p. 82).

So closely does the vegetation of these islands resemble that of the neighbouring continent, that, with two or three exceptions, it does not contain a single plant which is not to be found in one or other of the countries beyond the Channel. The exceptions referred to are the three-toothed cinque-foil (*Potentilla tridentata*), the jointed pipe-wort (*Eriocaulon septangulare*), and a water-weed named *Anacharis alsinastrum*. Even these are probably not indigenous to the United Kingdom, but appear to have migrated across the Atlantic from the New World. The British Isles cannot be regarded as a "centre of vegetation" (p. 53), but as having been colonised by a succession of vegetable migrations from the continent of Europe. Edward Forbes and others regard these migrations as having commenced as early as the epoch of the Middle Tertiary formation—when one unbroken continent extended from the Mediterranean to the British shores—and as having been continued till the present time.

Our entire flora may, however, be divided into four groups of plants, corresponding with the continental regions from which they are supposed to have migrated. Thus, we have—1. The *Germanic* group, which forms the grand staple of our vegetation, and embraces our trees, shrubs, weeds, and common wild-flowers, all of which are equally abundant in Germany, the Netherlands, Belgium, and north of France; 2. The *Scandinavian* group—found chiefly in the Highlands of Scotland, and more sparingly in the mountains of Cumberland, Wales, and Ireland, consisting of lichens, mosses, grasses, some flowering plants of great beauty, and several berry-bearing shrubs, as the cranberry, bilberry, and cloudberry—plants which are abundant in the mountains of Scandinavia and in the lowland regions of Arctic Europe; 3. The *Armorican* group in the S.E. of Ireland and S.W. of England, where the vegetation is closely allied to that of Brittany and Normandy, the ancient *Armorica*; 4. The *Asturian* group, in the S.W. of Ireland, where about 12 species of plants are found which are common in the mountains of Northern Spain, though occurring nowhere else in the British Isles,—as St Patrick's cabbage (*Saxifraga umbrosa*), the strawberry-tree (*Arbutus unedo*), and various species of heath.

Botanists vary considerably in their estimates of the total number of species belonging to our native flora, owing to the uncertainty that attaches to many species as to whether they are really native, or have been introduced by man. Thus Professor Balfour, in his 'Manual of Botany,' considers our indigenous species to amount to 4400, of which 3280 are common to England and Scotland. He states the number of flowering plants at 1600, and of the non-flowering or cryptogamic (embracing *algæ* or *sea-weeds*, *ferns*, *mosses*, *lichens*, and *fungi*) at 2800 species. The 'Physical Atlas' gives the number of our flowering plants as 1371, of which 340 are monocotyledons and 1031 dicotyledons. Of the 2000 known species of ferns, about 60 are found in the British archipelago, and of the 1100 mosses we have about 300. We have also numerous species of lichens, fungi, and algæ, though the statistics are less precise.

Of *forest-trees* acknowledged to be of British origin, the principal are the oak, elm, birch, beech, ash, alder, pine or Scotch fir, poplar, willow, yew, mountain-ash, maple, holly, and hawthorn. Of trees that are known to have been introduced by man from foreign countries may be mentioned the chestnut, lime, walnut, Norwegian spruce, larch, weeping-willow, Lombardy poplar, mulberry, and cedar. Our principal *fruit-trees* are the apple, pear, cherry, plum, peach, walnut, currant, gooseberry, strawberry.

Agriculture.—British farming has attained to an unrivalled degree of perfection. The general study of agricultural chemistry, and the consequent adoption of rotation of crops, together with the adoption of a thorough system of drainage, have mainly contributed to this result; but the vast number of good roads, canals, and railways that intersect the kingdom in all directions, and enable the agriculturist to convey the produce of his farm to the best market, has also very powerfully contributed to bring about the same result.

Estimating the area of the entire archipelago at 122,550 sq. m., or 78,000,000 acres, we learn from the Board of Trade Report for 1868 that there were in that year 45,652,000 acres under cultivation, of which 11,659,000 acres were under corn, 4,865,000 under green crops, 5,690,000 under clover and "rotation grasses," and 22,164,000 under permanent pasture. In every 100 acres in England 42 are in pasture; in Wales, 56; in Scotland, 23; and in Ireland, 64. The greater proportion of the inhabitants of Great Britain are engaged in manufacturing, mining, and commercial pursuits, while Ireland and Wales are strictly agricultural countries. The industrial pursuits of a country depend, to a great extent, on its geological character. Generally speaking, the most ancient geological formations are the richest in minerals, while the more recent are the best adapted for agriculture. Accordingly, if we draw a line from the mouth of the Tees, in Durham, to Leicester, and thence to Gloucester and the river Exe, we shall find that nearly all the mining and manufacturing districts of England lie to the W. of it, and all the agricultural districts to the E. In like manner, if we draw a straight line from Dundee to Dumbarton, and another from Berwick to Girvan, we shall have the limits of all the coal-fields and iron-mines of Scotland: all the great centres of commerce and manufactures, as also the principal harbours of the country, are found between these lines.

The *cereal* crops of the United Kingdom consist of wheat, barley, bigg, and oats. The total quantity of corn of all kinds annually produced is estimated at 51,480,000 qrs.; while the annual value of real property, as assessed under the Property-tax Act in 1864, was £323,000,000. *Other cultivated plants* comprise the potato, turnip, mangold, carrot, radish, beet, cabbage, pease, beans, hops, flax, hemp, vetches, clover, and rye-grass.

Zoology.—The fauna of the British Isles is wholly embraced

within the middle province of the first or European Zoological Kingdom—(see above, p. 57).

I. THE VERTEBRATA, or Mammals, Birds, Reptiles, and Fishes.

The **Mammalia** of the United Kingdom are represented by only four orders—viz., the Carnivora, Rodentia, Ruminantia, and Cetacea; the other four being wholly absent—viz., the Quadrumana, Marsupialia, Edentata, and Pachydermata. The last-named order is indeed represented by the horse, ass, and sow; but as they are no longer found here in their wild state, we do not take them into account. The orders actually represented embrace 60 species; but if we deduct the bats and the marine mammals, not more than 40 species will remain—a mere fragment of our mammalian fauna during the epoch of the Boulder Clay, when, in addition to the existing species, these islands contained the elephant, rhinoceros, hippopotamus, tiger, hyæna, the great elk, the gigantic deer, two species of beaver, and three species of bear. Several species—as the beaver, bear, wolf, wild ox, and wild boar—have been extinguished during the historical era by the cutting down of the forests, the cultivation of the soil, and the destructive effects of the chase; while not a few others have become very rare, as the badger, polecat, and squirrel. The *Carnivora* are represented by the fox, dog, weasel, ermine, foumart, martin, polecat; the hedgehog, mole, shrew, and badger; the otter, seal, and walrus; and by 9 species of bat. The badger is not found N. of the Caledonian Canal, nor the mole N. of the Pentland Firth, or in Ireland. The *Rodentia* embrace the squirrel, hare, rabbit, dormouse, 3 species of mouse, 2 of rat, and 4 of arvicola. The *Ruminantia* are 3 species of deer—the red, roe, and fallow deer; the ox, goat, and sheep. The *Cetacea* embrace the porpoise, grampus, sea-cow, and various species of whales and dolphins.

Birds are comparatively numerous in the British Isles; for while the total number of species belonging to Europe is only 490, no fewer than 274 are found in the United Kingdom, of which 230 are known in Ireland. Each of the six orders is largely represented. The *Raptores*, or Birds of Prey, include the golden eagle and earne, the hawk, kite, falcon, and various species of owl. The *Climbers* embrace the cuckoo, woodpecker, swift, goatsucker, hoopoe, and kingfisher. The *Songsters* are chiefly the lark, nightingale, linnet, bullfinch, wren, wagtail, titling, bunting, titmouse, swallow, and various thrushes. *Gallinaceous Birds* include the red-grouse (peculiar to this country), the ptarmigan, blackcock, partridge, common quail, and various species of pigeon. The capercailzie, or cock of the wood, some time ago extirpated, has been reintroduced recently from Norway. The peacock, turkey, common fowl, Guinea hen, and pheasant, are all of foreign origin. The *Waders* are represented by the bustard, craik, crane, plover, snipe, heron, and stork; and the *Swimmers* by the cormorant, gannet, gull, petrel, duck, and goose.

Of the 73 species of European **Reptiles**, only 14 occur in the British Isles. Of the four orders belonging to this class, the first, or *Tortoise* order, has no representative in our archipelago, save that the

hawk's-bill tortoise has been occasionally seen in the Hebrides, and the leathery tortoise in Cornwall. Of the *Saurians* there occur only 3 species—viz., 2 lizards and 1 skink; but numerous other species belonging to the order—some of them of most gigantic dimensions—existed here in the geological eras, as the crocodile, megalosaurus, iguanodon, ichthyosaurus, and plesiosaurus. Of the 15 European *Serpents* only 3 are found in the United Kingdom—viz., the blind-worm, snake, and adder or common viper, the last-named of which is alone venomous; and of the 23 European *Batrachians* there occur only the eft, toad, and frog.

Fishes.—Of the twenty-five provinces of marine life into which the late distinguished Professor Edward Forbes proposed to divide the waters of the globe, the British seas form a part of the third, or *Celtic province*. This province is confined to the European side of the Atlantic; embraces the Baltic, North Sea, English Channel, Irish Sea, and the entire western shores of the British Isles; and is bounded on the N., W., and S. by the Boreal, Virginian, and Lusitanian provinces, respectively. Its population is of a very mixed character, owing to numerous colonists from the regions lying to its N. and S; but it is distinguished as being the great field of the herring fisheries, and for the thorough investigation which its fauna and flora have received at the hands of British, Danish, and Swedish naturalists. Of the 8000 fishes already known to the ichthyologist, the seas, rivers, and lakes of the United Kingdom embrace 263 species. Fishes are usually divided into two orders—the *cartilaginous* and the *osseous*; the former embracing only a few British species, as the sturgeon, ray or skate, shark, dogfish, lamprey, pride, hag, and sailfish; and the latter a very great number, including the salmon, trout, char, herring, pilchard, pike, carp, gudgeon, cod, ling, tusk, whiting, sole, turbot, fluke, halibut, eel, perch, mackerel, and minnow.

II. INVERTEBRATED ANIMALS.—Our limits forbid our enlarging on the invertebrated fauna of the British Isles; and we can only state a few of the more interesting facts, referring the student for details to works on natural history.

Mollusca.—This division of the Invertebrata consists of animals having bodies composed of soft parts, without any internal skeleton, some of which are protected by shells, while others are naked; having white, cold blood; breathing organs, lungs, gills or branchiæ; and of limited senses and instincts. They are usually divided into five classes—viz., *Cephalopoda*, *Pteropoda*, *Gasteropoda*, *Acephala*, and *Brachiopoda*. These are subdivided into about 200 genera, and probably embrace 20,000 species (see p. 56). Of the *shell-bearing molluscs*, 392 species* (or 232 univalves and 160 bivalves) frequent the British seas; the most plentiful genera being Trochus, Lacuna, Patina, Rissoa, Pullastra, and Acidia. Though greatly inferior, both in size and beauty, to species inhabiting tropical seas, our shell-bearing molluscs are often highly ornamental; others, again, are largely used as articles of diet, as the oyster, mussel, cockle,

* Now about 520 species (see p. 21).

whelk, and limpet. The *Nudibranchiata*, or molluscs destitute of a shell, are also very numerous in the Celtic province.

Articulata, or jointed animals, also comprise five classes—viz., *Annulata*, *Crustacea*, *Cirrhopoda*, *Arachnides*, and *Insecta*; the first of which is represented by the earth-worm and the leech, the second by the crab and lobster, the third by the barnacle and balanus, the fourth by the spider and mite, and the fifth by the dragon-fly, bee, butterfly, moth, fly, and gnat. The number of British insects already known exceeds 10,000 species, one-third of which extend to Ireland.

The **Radiata**, so called from having their limbs or members branching off from a common centre, like the spokes of a wheel, also comprise five classes—viz., *Echinodermata*, *Entozoa*, *Acalepha*, *Polypi*, and *Infusoria*, which are represented respectively by the starfish and sea-urchin, the tape-worm, the medusa, the zoophyte or coral insect, and the small microscopic animals named animalcules, which embrace the lowest forms of animal life, and exist in countless numbers in vegetable infusions.

Ethnography.—The British people belong to two distinct varieties of the Caucasian family—the Celtic and the Teutonic.

The Celts were probably the original inhabitants of the neighbouring continent, more especially of its western side; and, at a period prior to the dawn of history, migrated into Britain, and formed its earliest inhabitants. The great Celtic family, before arriving at their ultimate destination, became divided into two main sections, the *Gael* and the *Kymri*, who were mutually hostile, and spoke widely-different languages. The Gael seem to have been the earliest settlers in this island, but to have been speedily dislodged by the more powerful Kymri, and driven into Scotland, Ireland, the Hebrides, and the Isle of Man,—thus forming the ancestors of the Scottish Highlanders, the Irish, and the Manx. The Kymri occupied S. Britain as far north as the Grampians, and became the ancestors of the Welsh and the Cornish. The Kymri more resembled the inhabitants of Celtic Gaul in their language than the Gael did; and some of our most eminent ethnologists maintain that the ancient Picts and Caledonians were Kymric tribes, though others insist on their Gothic origin (p. 86). But the great bulk of the population belongs to the **Teutonic Race**, partly to its Gothic, and partly to its Scandinavian branch. To the *former* belonged the Anglo-Saxons, whose original home was the country lying S. of the Caspian, and afterwards Germany, between the Eyder and the Weser, and who began to invade the east of England in the year A.D. 449, continuing their incursions for a century afterwards. They overcame the Celtic tribes that then occupied the land, and drove them into the mountain-fastnesses of Wales and Cornwall. The next invasion of Britain took place about the beginning of the eleventh century, and those who took part in it were *Scandinavians*, chiefly Danes, under the celebrated Canute, who reigned over the Anglo-Saxons from A.D.

1017 to A.D. 1036. The last invasion of our shores was also by a Gothic tribe—viz., the Normans, who, under William the Conqueror, established their rule by the battle of Hastings, A.D. 1066, and changed the Anglo-Saxon language of the population into the modern English. Gothic tribes, therefore, form the great bulk of the present population of England, of Scotland south of the Grampians, of the N.E. coast of Scotland, including the Orkney and Shetland Isles, the N. and E. of Caithness, and Ulster. They have, moreover, largely commingled with the Celtic race in all the remainder of the British Isles, so that it is now very difficult to find an unmixed Celtic population anywhere. The following is an approximation to the relative proportions of the two races as they exist at present in the British Isles:—Of Celtic blood, pure and mixed, 11,470,000; Teutonic blood, pure and mixed, 18,200,000; completely intermingled, 1,345,000.

Languages.—The languages presently spoken in the British Isles are five in number—Irish, Welsh, English, Lowland Scotch, and French. The two first belong to the *Celtic Stock*, and represent the most ancient language in Europe. The Scottish Gaelic and the Manx are mere dialects of the Irish; and the Armoric of Brittany, and the now extinct Cornish of Cornwall, are nearly identical with the Welsh. But the Irish and Welsh branches are widely different, though their affinities are so numerous and close that they must be referred to the same stock. The English and the Lowland Scotch belong to the *Teutonic Stock* of languages—the former to the Germanic, and the latter to the Scandinavian branch.

The three Teutonic tribes above alluded to—the Jutes, Saxons, and Angles—who invaded Britain in the fifth and sixth centuries, all spoke dialects of the same language. The union of these dialects resulted in the formation of the Anglo-Saxon,—a language which maintained its purity till about A.D. 1258, when it began to amalgamate with the Norman French, which had been introduced about two centuries previously by William the Conqueror. The result of this amalgamation was the modern English, less refined, indeed, in its structure than some other tongues, but more widespread, and containing more literary and scientific treasures than any other, ancient or modern. It is essentially a compound language, and borrows freely from all sides, but still preserves to a great extent the lineaments of its parent. The Anglo-Saxon is the groundwork and substratum of the English; and however extensive, therefore, our knowledge may be of the Greek and Latin, we can never thoroughly understand our own language without an acquaintance with the Anglo-Saxon and other kindred Gothic tongues. The Lowland Scotch is no dialect of the English, and is not, like the latter, descended from the Anglo-Saxon, but is a parallel and sister tongue. Its true parent is the Norse—a Scandinavian and not a Gothic language. In Caithness, Orkney, and Shetland, the geographical names are nearly all Norse; and throughout Scotland generally the language of the people is more akin to the Icelandic than to the Saxon. Instead of being regarded as a mere corruption of the English, it has all the qualities of a regular and cultivated language, and is possessed of a highly-fascinating literature. French is spoken in the Channel Isles,—the only portion of Normandy

now belonging to the English Crown, to which they have remained attached ever since the Conquest.

Religious Belief.—Christianity is professed, under some one or other of its forms, by nearly all the population of the British Isles; but in no other country, with perhaps the exception of the United States, is the religious community divided into so many sects. No fewer than 146 denominations exist in Britain alone; and for the entire kingdom there are at least 150. Perfect freedom of opinion on all subjects, and more especially complete toleration of all varieties of creed, are the main causes that originate this unparalleled multiplication of sects—the great and standing reproach of Protestantism. The 150 denominations may, however, be reduced to two great divisions—viz., Protestants and Roman Catholics. The proportion of the population belonging to each of these divisions is as follows:—Protestants, 22,817,000; Roman Catholics, 6,490,000. The Protestants, therefore, are to the Roman Catholics as 4½ to 1, the latter being found chiefly in Ireland, where they amount to 4,490,000. The total Roman Catholic population of Great Britain in 1868 was about 2,000,000.

The principal Protestant denominations in the British Isles are, the Episcopalians, Presbyterians, Independents, Baptists, and Methodists. The general census of 1871 does not furnish religious statistics for England and Wales. Here Episcopacy is established by law, and the Queen is the supreme governor of the Church. There are two archbishops—viz., of Canterbury and York, the former of whom is Primate of all England. He enjoys the privilege of crowning the sovereign of the realm, and of being the usual channel of communication with the Crown on constitutional questions affecting the interests of the Church. The province of Canterbury embraces 21 dioceses, each of which is presided over by a bishop. These dioceses are,—London, Winchester, Lichfield, Exeter, Worcester, Lincoln, Norwich, Rochester, Gloucester and Bristol, Oxford, Peterborough, Ely, Canterbury, St David, Bath and Wells, Llandaff, Salisbury, Chichester, St Asaph, Hereford, and Bangor. The province of York contains 7 dioceses,—Manchester, Chester, Ripon, York, Durham, Carlisle, Sodor and Man. Presbyterianism is established in Scotland. The Scottish Church has no hierarchy—all the clergy are on an equality, and the body is governed by kirk-sessions, presbyteries, provincial synods, and by the General Assembly which meets annually in Edinburgh, and which consists of delegates, both clerical and lay, sent up by the presbyteries, the royal burghs, and the universities. There are 84 presbyteries, 16 synods, and 1023 parishes. Previous to 1843, the Established Church embraced the great bulk of the population; but in that year a great disruption took place, in consequence of the interference of the civil courts with the spiritual privileges of the members, especially in the matter of election of ministers. The body thus formed is known as the Free Church of Scotland, which in doctrine, discipline, and government does not differ essentially from the Established Church, except in the matter above referred to. The Established Church and the Free Church have each about a third of the population. The United Presbyterian Church is also very numerously attended, embracing 600 congregations and about 180,000 members—nearly a fourth of the entire population. The only other religious bodies of importance are the Scottish Episcopal

Church, the Congregationalists, and the Roman Catholics. In Ireland, the hitherto Established Church is a branch of the Church of England, presided over by two archbishops (Armagh and Dublin) and 12 bishops. It embraces, however, little more than a seventh part of the population (being, in 1871, 683,295), and consequently, as the Church of the minority, it was disestablished and disendowed by Act of Parliament in 1869. Those in communion with the Roman Catholic Church were 4,141,933; Presbyterians and other Protestant Dissenters, 613,013.

Form of Government.—The Government of the United Kingdom is a limited monarchy. The legislative authority is vested in the Sovereign and Parliament, which consists of a House of Peers and a House of Commons; and the concurrence of these three estates is necessary to the enactment of new laws, or the repeal of those already existing. The crown is hereditary. The House of Peers consists of about 490 members, including lords spiritual and temporal, and is composed of princes of the blood-royal, 2 archbishops, 24 English bishops, 20 dukes, 19 marquesses, 110 earls, 22 viscounts, 214 barons, with 16 Scotch and 28 Irish representative peers. The House of Commons consists of 652 elected members, of whom 487 are for England and Wales, 105 for Ireland, and 60 for Scotland. This gives 1 member to each 50,000 of the population. Parliaments are septennial, but generally expire sooner, and members of the House of Commons are elected for a single parliament. Any legislative measure may originate in either House, but the House of Commons possesses the exclusive privilege of originating money-bills, and voting money out of the revenue. In this single privilege lies the palladium of the commonwealth; for though the monarch may declare war with a foreign power and levy armies, the war cannot be prosecuted, nor the army paid, but by the consent of the representatives of the nation.

Army and Navy.—The extent of the British empire renders it necessary to keep up a large naval and military force; but owing to our insular position, our unrivalled navy, the equity of our laws, the purity of our religion, and the happiness and contentment of our people, there is no European nation that maintains so small a standing army, in proportion to its population. In 1853, before the commencement of the Russian war, the royal navy numbered 545 ships of all classes, which carried 18,080 guns, 58,000 seamen, and 18,616 marines. The army numbered 214,421 men, exclusive of militia; and the annual cost of both army and navy was £24,000,000. In 1872 the total strength of the army amounted to 196,065 men and officers, of whom 62,864 were in India, and 28,333 in the colonies. Besides these, we have 128,900 militia, costing £952,700; volunteers, 199,000, costing the Government £414,000. Our naval force in the same year amounted to 398 vessels, including 54 armour-plated ships, 4 floating batteries, 44 ships of the line, and 32 frigates; number of marines, 63,300. The total cost of the army was £14,230,400, and of the navy, £9,996,641; total, £24,227,041. In 1814, during the war with France, the expense of our army and navy cost the country £71,686,000. Our principal naval arsenals and dockyards

at home are those of Deptford, Woolwich, Chatham, Sheerness, Portsmouth, Devonport, Pembroke, and Haulbowline; and abroad, those of Gibraltar, Malta, Halifax, Bermuda, Antigua, Jamaica, Ascension, Sierra Leone, Cape Town, Trincomalee, Singapore, and Hong Kong.

Manufactures and Commerce.—Britain stands unrivalled among the nations both in the extent of her commerce and the variety of her manufactures. Several causes concur in rendering her commerce superior to that of other countries. By referring to a terrestrial globe, it will be seen that her metropolis stands almost exactly in the centre of the land-surface of the globe. But this favourable position would be of little avail were it not that she is surrounded by seas on all sides, and thus placed in circumstances to prosecute her commerce in all directions without encountering any physical obstacle. In addition to her insular position, she further enjoys the advantage of numerous excellent harbours, canals, roads, railways, and navigable rivers, by which her industrial products can be readily and cheaply conveyed to the seaboard. But perhaps the greatest physical advantage that Britain enjoys over other countries consists in the unrivalled extent and variety of her mineral treasures—especially those of coal and iron, which are usually found in close juxtaposition, the one affording the material of her manufacturing machinery, and the other the means by which that machinery can be wrought with advantage. Accordingly, all the great manufacturing centres of the kingdom are situated in or near the great coal-fields (see above, under "Minerals"). Our two most important manufactures are those of textile fabrics and of metallic goods. A large proportion of the population depend directly on these for support. The *woollen* manufacture, though the oldest in the kingdom, is now second in importance to the *cotton*, of which upwards of 10 millions of cwt. are annually imported, in the form of cotton wool, then wrought up into a vast variety of fabrics, and exported to all parts of the world.

Exports and Imports.—Our imports are chiefly of two classes—viz., food for our people, and raw material for our manufacturing industry. The home supply of the former is annually decreasing in proportion to the population, partly owing to deficient harvests, and partly from less land being devoted to the growth of cereals, pasture being more remunerative. Hence, during the last few years we have been obliged to import about one-half of the entire food of our people. In 1873 alone we paid for foreign corn no less than £52,000,000. Five-eighths of this supply came from distant countries (chiefly from N. America and Russia), and three-eighths from the nearest ports of Europe. Our total imports for 1873 amounted in value to £371,257,668, of which £290,700,000 were from foreign countries, and £81,010,547 from British possessions. Of foreign countries the United States stand first, that country having sent us to the value of £71,000,000, chiefly cotton; then come France (£43,800,000), Russia (£20,000,000), Egypt (£14,000,000, including transit), China and Netherlands, £12,000,000 each. The six principal articles of import are cotton, corn, sugar, wool, timber, and tea.

In the same year our exports amounted to £311,000,000, of which £250,060,000 were to foreign countries, and £61,000,000 to our colonial possessions. The foreign countries to which we export most are Germany (£27,000,000), United States (£35,800,000), France (£17,500,000), Netherlands (£16,700,000), and Russia (£9,000,000). The principal articles of export are cotton, woollen, and linen goods, metallic goods, machinery, coals, and apparel. Speaking generally, one-third of our exports and imports together is carried on with our own possessions abroad. From India we get rice, cotton, silk, sugar, jute, indigo, tea, spices, and fine woods; from the West Indies, sugar, tobacco, coffee, rice, and rum; from the Australian colonies, gold, copper, and wool; from our N. American possessions, gold, timber, furs, fish, and oil. Our mercantile marine greatly exceeds that of any other country. In 1869 the number of British vessels that entered our ports was 25,074, carrying 8,751,899 tons; and of foreign, 17,611 vessels, carrying 4,123,878 tons; total 42,685 vessels, and carrying 12,775,777 tons. In the same year there left our shores 29,629 British vessels, and 19,582 foreign, with a total tonnage of 14,345,317.

Finance.—The estimated revenue for 1870 was £72,855,000, the chief items of which were customs, excise, taxes, stamps, property and income tax: the expenditure was £68,223,000, of which the interest on the Public Debt amounted to £22,454,000; army and navy, £24,227,000; and the expense of the expedition to Abyssinia, £5,000,000. The National Debt amounts to the enormous sum of £737,400,000, or upwards of £23 stg. for every man, woman, and child in the United Kingdom. It commenced in the reign of William III. (in 1689), and from that period, owing to our numerous wars with foreign States, has been constantly increasing. In 1697 it amounted to about £5,000,000; at the outbreak of the American War of Independence, in 1774, it did not exceed £128,000,000; at the conclusion of that war it amounted to £250,000,000; while at the termination of the French war it amounted to £848,282,477. Notwithstanding its decrease during the last 50 years, it is still half as large as the combined debt of all other European States, except France.

Inland Communication, in proportion to area, is also greatly superior to that of any other country. Our turnpike roads, canals, and railways, form a perfect network of communication, which extends to the remotest parts of both the main islands. On the first January 1875 there were 16,449 miles of railway open for traffic in the United Kingdom, of which 11,622 were in England, 2700 in Scotland, and 3127 in Ireland. The total cost of construction amounted to £610,000,000, being £37,078 per mile. The number of passengers annually conveyed by them exceeds 350,000,000; and the total receipts for passengers and freight amount to upwards of £60,000,000 annually. So great is the safety of railway travelling, that only one traveller out of every sixteen millions is killed, and one out of every half a million injured. Our turnpike roads now exceed 35,000 miles, all of which are kept in excellent repair, and about 150,000 miles of cross-roads. Besides these we have 1800 miles of river-navigation that have been opened by artificial means,

and 2800 miles of navigable canals. During the last twenty years, moreover, 120,000 miles of telegraph-wires have been laid down, thus connecting by instantaneous communication all the cities, towns, and great maritime ports of the United Kingdom, and connecting the country by submarine cables with the continent of Europe, India, and America. On the 5th February 1870, the Government took into its own hands all the telegraphs of the country. These amounted, in 1874, to 107,000 miles; while on the Continent there are 100,000 miles, and 70,000 in America. Another mighty engine for furthering the interests of commerce and for promoting the intelligence of the people is the Post-Office, which has its branches and ramifications in all corners of the land. The number of letters transmitted in 1870 was 900,000,000, or 28 letters per annum for every individual of the population. Mr Rowland Hill's penny-postage scheme for inland letters came into operation in 1840; and a uniform rate of sixpence now suffices for carrying letters to the most distant of the British colonies. Books can be transmitted by post to any part of the kingdom at the rate of fourpence per lb., and to the colonies at threepence or fourpence per 4 oz.

Historical Sketch.—The British Isles were peopled by the Gael and Kymri long before the dawn of authentic history. It was not till a late period that the Greeks and Romans obtained any knowledge of them; but in early times the Phœnicians visited the Scilly Islands and the coasts of Cornwall for tin. Aristotle, the disciple of Plato and tutor of Alexander the Great (B.C. 342), is the first to record the existence of "two large islands in the ocean, named Albion and Erin." The Romans knew nothing of them personally till the Gallic war of Julius Cæsar, who twice invaded Britain (B.C. 55, 54). Cæsar's stay was of limited duration, and accompanied by no important result; and the Romans made no further attempt to conquer the island for 100 years. In the reign of Claudius they again landed, and permanently subdued the country south of the Thames. In the year 61 A.D. the Britons, under Boadicea, sustained another decisive defeat; and the conquest of south Britain was finally completed by Agricola (A.D. 78-84). In order to protect his newly-acquired territory from the incursions of the northern Celts, he erected a series of forts between the Firths of Clyde and Forth, calling the country lying to the south of it *Britannia Romana*, and that to the north Caledonia, or *Britannia Barbara*. The Romans, however, gave up the northern conquests of Agricola in the reign of Adrian (A.D. 121), and caused a wall to be built from the Solway to the mouth of the Tyne as the extreme limit of the Roman province. Early in the fourth century the Caledonians, who now appear under the names of Picts and Scots, broke through the wall, and Gothic tribes began to infest the coasts; but the declining power of the Empire was unable to afford the province any effectual assistance, and in the reign of Honorius all the Roman troops were withdrawn from the island (A.D. 418). About 30 years after the departure of the Romans, the Jutes, Saxons, and Angles, successively invaded south Britain, and drove the Kymri into Wales (A.D. 449). These

Gothic nations divided England into seven parts, each of which had its own chief; and their government is called the Saxon Heptarchy, which began in 582, and maintained its ground till the Danes under Sweyn invaded the country in 1013. The Normans, from France, subdued the country half a century afterwards; the battle of Hastings was fought in the year 1066, and the Anglo-Saxons were reduced to a state of slavery.

Of the subsequent history of the British Isles we can only enumerate a few of the most important facts. Ireland was subdued by Henry II. of England, A.D. 1172. Richard I., King of England, engaged in the Third Crusade in 1189. The *Magna Charta* was signed by King John in 1215. Wales was subdued and added to England by Edward I. in 1282. The first House of Commons was summoned to convene in 1265, and there has been a regular succession of parliaments since 1293. Wickliffe's translation of the Bible was executed in 1380, and Caxton introduced the art of printing into England in 1471. In 1468 the Orkney and Shetland Islands were bestowed by the King of Denmark on James III. of Scotland. In 1525 Tyndale's translation of the New Testament was published at Wittemberg, and nine years afterwards in England. The Reformation began in Scotland under Patrick Hamilton in 1528, and in England in 1536; in 1584 Virginia was taken possession of for England by Sir Walter Raleigh; and in 1588 the Spanish Armada was destroyed by the English. In 1603 the crowns of England and Scotland were united in the person of James VI.; and Barbadoes, Britain's first colony, established in 1604. A civil war in Britain terminated in the execution of Charles I. in 1649, and Oliver Cromwell became dictator for eleven years. In 1662 the Royal Society was instituted; in 1665 the plague broke out in London; and Newton's Philosophy was published in 1687. The celebrated Revolution took place in 1688, and William III. was called to the throne. The legislative Union of England and Scotland took place in 1707; and the first and second rebellions in Scotland in 1715 and 1745 respectively. The American War of Independence began in 1774 and terminated in 1783. The war with Revolutionary France commenced in 1793, and terminated by the battle of Waterloo in 1815. The legislative Union of Great Britain and Ireland took place in 1801, and was followed the same year by the first regular census of the British Isles. Coal-gas was first used for lighting apartments in 1792; the Surrey tram-railway, the first in Britain, was constructed in 1801; and in 1812 Henry Bell's diminutive steamer, "The Comet," the commencement of European steam-navigation, was launched on the waters of the Clyde. The Catholic Emancipation Act was passed by the British Legislature in 1829, and the Reform Bill in 1832. In 1842 the Tariff Reform was begun, which has resulted in Free Trade; and the first Industrial Exhibition of all nations took place in London in 1851. In 1854, Great Britain, in alliance with France, declared war against Russia, in consequence of its encroachments on Turkey; and in 1855 Sebastopol was taken by the allied armies of Britain, France, Turkey, and Sardinia. In

1856, Oude was annexed to British India, and in the year following the great rebellion broke out, by the Sepoys, at Meerut, shooting their officers and massacring all Europeans. In 1858, the rebellion having been suppressed, the Queen of England became Empress of India. A treaty of commerce between Great Britain and France was signed in 1860, and peace was established with China. The illustrious Prince Albert died in 1861; in 1862 the second International Exhibition was opened in London; in this year great distress was experienced in the manufacturing districts of England, America having ceased to supply us with cotton, owing to the civil war, and to the southern ports of the Union being blockaded by the U.S. Navy. In 1863, the Prince of Wales married the Princess Alexandra of Denmark, and in the year following the Ionian Islands were finally ceded by Great Britain to Greece. The year 1865 was marked by the death of Lord Palmerston and of Richard Cobden, by the commencement of Fenianism, and of the cattle plague in England, and by the Jamaica insurrection. In 1867, the new Reform Bill, which greatly extended the franchise, received the Royal sanction; in 1868, Sir Robert Napier, with a British force, captured Magdala and rescued the Abyssinian captives; the Disraeli Ministry resigned, and Mr Gladstone became Prime Minister. In 1869, the Irish Church was disestablished; while, in 1870, Government came into possession of the various lines of electric telegraph throughout the kingdom, and obtained the sanction of Parliament to a measure regulating the tenure of land in Ireland.

ENGLAND AND WALES.

Position and Boundaries.—England, including Wales, forms the south part of Great Britain, and is situated between lat. 49° 58′ and 55° 47′ N.; and between lon. 1° 45′ E. and 5° 43′ W.; thus occupying 5° 49′ of lat., and 7° 28′ of lon. It is bounded on the N. by Scotland, from which it is separated by the Tweed; on the E. by the North Sea; on the S. by the English Channel, which separates it from France; and on the W. by the Atlantic, St George's Channel, and the Irish Sea.

Form, Coast-Line, and Extreme Points.—In form it approaches to a scalene triangle: the base, from Land's End to South Foreland, is 317 miles; the east side, from South Foreland to Berwick, 345 miles; and the west side, from Berwick to Land's End, 425 miles. Lizard Point forms the extreme south of the mainland; Lowestoft Ness, in Suffolk, the extreme east; Berwick the extreme north; and Land's End in Cornwall the extreme west. The perimeter of the triangle above mentioned is 1087 miles; but when the principal in-

dentations of the coast are included the sea-margin is at least 2000 miles, affording 1 mile of coast to every 29 sq. m. of surface. The principal indentations are on the W. side, especially the Bristol Channel, Cardigan Bay, Morecambe Bay, and the Solway; those on the E. side are the Humber, Wash, and the estuary of the Thames.

Area and Population.—The area is 58,320 sq. m.; being 50,922 for England, and 7398 for Wales; and amounts to a little more than $\frac{1}{20}$ of the area of the entire island, which is, in turn, $\frac{1}{47}$ of the area of Europe. In 1871 the population was 22,704,108; or 21,487,688 for England, and 1,216,420 for Wales; while in the year 1801 it only amounted to 8,892,536, and in 1821 to 12,000,236. It has thus nearly doubled itself in the half-century. The population per sq. m. is 389, or 422 for England without Wales, which is thinly peopled. England is, therefore, one of the most densely peopled countries in the world. The most populous counties are Middlesex, Surrey, Lancashire, and Yorkshire. There are 9036 persons to every sq. m. in Middlesex, and 1560 in Lancashire; while there are only 85 in Westmoreland, and 60 in Radnor.

Political Divisions.—England is divided into 40 counties, and Wales into 12. The English counties are most conveniently arranged into 7 eastern, 10 southern, 7 western, and 16 midland counties.

In the following table, which includes all towns above 1000 inhabitants (680 in number), the population is given in every case where it amounts to 5000, as also the river on which the town stands. Towns between 1000 and 5000 are put in small type, while the rivers on which they stand will be found in the River System of England, p. 138.*

Seven Eastern Counties.

Northumberland. — Newcastle, 128,† Tynemouth, including North Shields, 39 (Tyne), Morpeth 5 (Wansbeck), Alnwick 7 (Aln), Berwick, 13 (Tweed).

Hexham, Haltwhistle, Bellingham, Blyth, Wooler, *Otterburn*.

Durham.—Durham 14, Sunderland with Wearmouth 98, Bishop-

* The student's attention is particularly requested to the *order* in which the towns and rivers are given. It is as nearly as possible the same as that in the extended table, entitled "Table of Rivers and Towns" (p. 137). The capital of the county, however, stands *first*, and is followed by all the large towns standing on the same river as the capital, beginning at the mouth and proceeding upwards, or beginning as near the mouth as the boundary of the county will allow. Should the capital stand on a *tributary river*, all the other towns in the county on that tributary are placed immediately after it; and then those on the main river, beginning at its mouth; and, lastly, those on the other tributaries, in the order in which they stand in the River System at page 138. Thus all the towns in any county belonging to one river-basin are enumerated before those belonging to any other river-basin are entered on. The name of the river is put within parentheses.—The order of the small towns is precisely the same as that of the large.

† The numerals following a city or town denote so many *thousands*: thus Newcastle 128, signifies that the population of Newcastle amounts to 128,000; n. means *near* the river the name of which follows.

Auckland 6 (Wear), South Shields 45, Gateshead 49 (Tyne), Stockton 28 (Tees), Darlington 28 (Skerne), Hartlepool 13 (E. coast).

Chester-le-Street, Wolsingham, Barnard Castle, Houghton-le-Spring.

Yorkshire.—YORK 44, Goole 9, Selby 5 (Ouse), Ripon 7 (Ure), Hull 122, Beverley 11 (Hull), Doncaster 19, Sheffield 240 (Don), Barnsley 23 (Dearne), Rotherham 8 (Rother), Pontefract 5 n., Leeds 259, Bradford 146 n., Keighley 15 (Aire), Wakefield 28, Dewsbury 25, Halifax 65 (Calder), Huddersfield 70 (Colne), New Malton 8 (Derwent), Knaresborough 5 (Nidd), Thirsk 6 (Codbeck), Scarborough 24 (east coast), Whitby 13 (Esk), Middlesborough 39 (Tees).

North and South Cave, Great Driffield, Kilham, Howden, Bingly, Skipton, Aldborough, Boroughbridge, Masham, Hawes, Leyburn, Thorne, Penninstone, Snaith, Castleford, Pocklington, Market-Weighton, Pickering, Helmsley, Kirkby, Tadcaster, Wetherby, Otley, Easingwold, Harrogate, Bedale, Richmond, Reeth, Tickhill, Bridlington, Guisborough, Settle, Stokesley, Northallerton, Sedbergh, Guiseley, Yeadon, Batley.

Lincolnshire.—LINCOLN 27, Boston 16, Spalding 7, Stamford 8 (Witham), Louth 11 (Ludd), Great Grimsby 20 (Humber), Gainsborough 7 (Trent).

Sleaford, Market-Rasen, Crowland, Bourne, Wainfleet, Spilsby, Alford, Barton, Epworth, Brigg, Caistor, Crowle, Horncastle.

Norfolk.—NORWICH 80, Yarmouth 42 (Yare), Lynn-Regis 16 (Great Ouse).

Wells, Wymondham, Hingham, Aylesham, North Walsham, Harleston, Diss, Attleborough, Thetford, Cromer, Holt, Downham-Market, Swaffham, Watton, Dereham.

Suffolk.—IPSWICH 43 (Orwell), Sudbury 7 (Stour), Lowestoft 11 (east coast), Eye 2 n. (Waveney), Bury St Edmund's 15 (Larke).

Beccles, Woodbridge, Stow-market, Long Melford, Haverhill, Hadleigh, Framlingham, Halesworth, Bungay, Brandon, Mildenhall.

Essex.—CHELMSFORD 6 (Chelmer), Maldon 5, Saffron-Walden 6 (Blackwater), Colchester 26, Halstead 6 (Colne), Harwich, 6 (Stour).

Dunmow, Thaxted, Brentwood, Coggeshall, Braintree, *Tilbury Fort*, Barking, Epping, Waltham Abbey, Romford.

TEN SOUTHERN COUNTIES.

Kent.—MAIDSTONE 26, Sheerness 12 (in the Isle of Sheppey), Chatham 36, Rochester 18, Tunbridge 6, Tunbridge Wells 14 n. (Medway), Folkestone 13 (south coast), Dover 28 (Strait of Dover), Deal 8 (east coast), Ramsgate 21, Canterbury 21 (Stour), Margate 12, Faversham 7 (north coast), Gravesend 21, Woolwich 42, Greenwich 168, Deptford 28 (Thames), Dartford 5 (Darent).

Hythe, Sandwich, Ashford, Herne Bay, Whitstable, Seven Oaks, Westerham, Sydenham, Bromley, Tenterden, Cranbrook, Milton.

Sussex.—LEWES 11 (Ouse), Chichester 8 (Lavant), Worthing 6, Brighton 90, Eastbourne 6, Hastings 29 (south coast), Midhurst 7 (West Rother), Horsham 7 (Adur).

Bognor, Little Hampton, Arundel, Petworth. Newhaven, Cuckfield, Hailsham, Rye, Battle, East Grinstead, New Shoreham.

Surrey.—GUILDFORD 9 (Wey), part of Deptford, Southwark and Lambeth (parts of London), Richmond 17, Kingston 15 (Thames), Croydon 27 (Wandle), Reigate 16 (Mole).

Godalming, Farnham, Chertsey, Epsom, Leatherhead, Dorking, Egham, Wandsworth.

Berks.—READING 32, Newbury 7 (Kennet), Windsor 12, Abingdon 6 (Thames).

Hungerford, Lambourn, Maidenhead, Wallingford, Hurst, Wokingham, Wantage, Great Faringdon.

Hampshire or **Hants.**—WINCHESTER 15, Southampton 54 (Itchin), Christchurch 9 (Hampshire Avon), Lymington 3 (the Solent), Andover 5 n. (Test), Portsmouth 113 (Portsmouth Harbour), Petersfield 6 (Rother). In the Isle of Wight are Newport 8, Cowes 5 (Medina), Ryde 11 (north coast).

Titchfield, Odiham, Ringwood, Fordingbridge, Romsey, Whitchurch, Bishop's Waltham, Fareham, Havant, Alton, Basingstoke, Kingsclere. In Isle of Wight—Osborne, Ventnor.

Wilts.—SALISBURY 13, Devizes 7 (Avon), Trowbridge 13, Malmesbury 7 (Lower Avon), Westbury 6 (Were).

Wilton, Mere, Melksham, Marlborough, Highworth, Amesbury, Warminster, Bradford, New Swindon, Calne, Chippenham.

Dorset.—DORCHESTER 7, Poole 10, Wareham 7 (Frome), Bridport 8 (Brit), Weymouth and Melcombe-Regis 13 (Wey), Sherborne 6 (Ivel).

Shaftesbury, Lyme Regis, Blandford, Beaminster, Wimborne, Sturminster-Newton, Cranborne, Stalbridge.

Somerset.—TAUNTON 15 (Tone), Bath 53 (Lower Avon), Frome 10 (Frome), Wells 5 (Axe), Bridgewater 12 (Parret), Yeovil 8 (Yeo), Weston-super-Mare 9 (Bristol Channel).

Glastonbury, Shepton-Mallet, South Petherton, Crewkerne, Somerton, Milverton, Wellington, Milborne Port, Ilminster, Chard, Wincanton, Bruton.

Devon.—EXETER 35, Exmouth 5, Tiverton 10 (Exe), Plymouth 68, Devonport 50 (Plymouth Sound), Tavistock 9 (Tavy), Dartmouth 5 (Dart), Teignmouth 6, Newton Abbot 5 (Teign), Torquay 18 (Tor Bay), Barnstaple 12 (Taw), Bideford 7 (Torridge).

Topsham, Crediton, Cullompton, Totness, Ashburton, Chudleigh, St Mary Ottery, Honiton, Sidmouth, Colyton, Axminster, Ilfracombe, Hartland, South Molton, Torrington, Hatherleigh, Brixham, Dawlish.

Cornwall.—BODMIN 5 (Camel), Camborne 7, St Agnes 7, St Ives 7 (W. coast), Penzance 10 (Mount's Bay), Falmouth 5, Truro 11, Redruth 8 n. (Falmouth Harbour).

Helstone, St Just, Stratton, Marazion or Market-Jew, Penryn, St Austell, Fowey, East Looe, St Germans, Saltash, Callington, Liskeard, Launceston.

SEVEN WESTERN COUNTIES.

Monmouth.—MONMOUTH 6 (Wye), Newport 27 (Usk), Tredegar 9 (Ebwy).

Chepstow, Abergavenny, Usk, Pontypool.

Hereford.—HEREFORD 18 (Wye), Leominster 6 (Lug).

Ross, Bromyard, Kington, Ledbury.

Salop or Shropshire.—SHREWSBURY 23, Bridgenorth 6, Much-Wenlock 20 n., Madeley 9 n. (Severn), Ludlow 5 (Teme), Wellington 6 n. (Tern), Oswestry 7 (Perry).

Market-Drayton, Shiffnal, Wem, Whitchurch, Broseley, Ellesmere, Newport, Bishop's Castle, Ironbridge, Dawley.

Cheshire.—CHESTER 36 (Dee), Birkenhead 66, Runcorn 10, Stockport 53, Hyde 14, Staley Bridge 21 (Mersey), Nantwich 6, Crewe 8 (Weaver), Congleton 11 (Dane), Altringham 7, Macclesfield 36 (Bollin).

Malpas, Neston, New Brighton, Middlewich, Sandbach, Knutsford, Tarporley, Bollington, Middlewich.

Lancashire.—LANCASTER 17 (Lune), Ulverstone 7 (Morecambe Bay), Preston 85, Clitheroe 8 (Ribble), Blackburn 76 n., Over-Darwen 14 n., Accrington 14 (Darwen), Burnley 32, Colne 6, Paddiham 6 n. (West Calder), Wigan 39, Leigh 11 (Douglas), Chorley 15 (Chor), Ormskirk 6, Prescot 7 (Alt), Liverpool 493, Warrington 32, Ashton-under-Lyne 32 (Mersey), St Helens 18 (Sankey), Manchester and Salford 481, Bury 42, Haslingden 7 (Irwell), Oldham 83 (Medlock), Middleton 10 (Irk), Bolton 83, Farnworth 9 n., Hindley 8 (Crole), Rochdale 45, Bacup 11 (Roche), Todmorden 12 (Calder).

Dalton, Kirkham, Lytham, Fleetwood, Widnes, Blackpool, Tyldesley, Church, Fleetwood, Much-Wolton, Great Harwood, Heywood, Droylsden, Newton in Makerfield.

Westmoreland.—APPLEBY 3 (Eden), Kendal 13 (Ken).

Kirkby-Stephen, Kirkby-Lonsdale, Orton.

Cumberland.—CARLISLE 31 (Eden), Penrith 7 (Eamont), Whitehaven 18 (west coast), Maryport 6 (Ellen), Workington 6, Cockermouth 7 (Derwent).

Wigton, Brampton, Longton, Keswick, Egremont, Aldstone.

SIXTEEN MIDLAND COUNTIES.

Derby.—DERBY 50, Belper 10 (Derwent), Chesterfield 11 (Rother), Glossop 19 n. (Etherow).

Matlock, Bakewell, Tideswell, Buxton, Ashbourne, Wirksworth, Dronfield, Hartington, Alfreton, Clay Cross, Ilkeston.

Notts or Nottingham.—NOTTINGHAM 87, Newark 12 (Trent), Mansfield 8 (Idle), Worksop 7 (Ryton).

East Retford, Southwell, Bingham, Kirkby-in-Ashfield.

Stafford.—STAFFORD 14 (Sow), Burton-on-Trent 16, Newcastle

under-Lyne 16, Stoke-upon-Trent 131*(Trent), Leek 10 (Churnet), Lichfield 7 n., Wednesbury 15 n., West Bromwich 17 n., Walsall 46 (Tame), Wolverhampton 68, Bilston 24 n. (Smestow).

Tamworth, Eccleshall, Rugeley, Stone, Tutbury, Uttoxeter, Cheadle, Penkridge, Cannock, Brewood.

Leicester.—LEICESTER 95, Loughborough 11, Hinckley 6 (Soar).

Melton-Mowbray, Ashby-de-la-Zouche, Market-Harborough, Lutterworth, Market-Bosworth.

Rutland.—OAKHAM 3 (Wreak), Uppingham 2 (Welland).

Worcester.—WORCESTER 33 (Severn), Evesham 5 (Upper Avon), Bromsgrove 5 (Salwarp), Kidderminster 19, Stourbridge 8, Dudley 44, Stourport 10 (Stour).

Bewdley, Upton, Droitwich, Pershore, Tenbury, Great Malvern, Halesowen, Redditch.

Warwick.—WARWICK 11, Rugby 8 (Upper Avon), Leamington 15 (Leam), Coventry 39 n. (Sow), Nuneaton 5 (Anker), Birmingham 344 (Rea).

Stratford, Alcester, Henly-in-Arden, Atherstone, Coleshill, Solihull, Sutton-Coldfield, Kenilworth, Bedworth.

Northampton.—NORTHAMPTON 41, Peterborough 17, Wellingborough 6 (Nene), Kettering 5 (Ise).

Daventry, Oundle, Rothwell, Brackley, Towcester, *Naseby*, *Fotheringay*.

Huntingdon.—HUNTINGDON 4, St Ives 3, St Neots 3 (Great Ouse).

Kimbolton, Ramsey, Godmanchester.

Cambridge.—CAMBRIDGE 30 (Cam), Ely 6 (Great Ouse), Wisbeach 9 (Nene).

March, New Market, Whittlesea.

Gloucester.—GLOUCESTER 18, Tewkesbury 5 (Severn), Bristol 183 (Lower Avon), Stroud 39 (Stroud), Cheltenham 45 (Chelt), Cirencester 6 (Churn).

Thornbury, Minchin-Hampton, Lydney, Coleford, Berkeley, Wotton-under-Edge, Stow, Bisley, Tetbury, Dursley.

Oxford.—OXFORD 32 (Thames), Banbury 4 (Cherwell), Woodstock 8 (Glyme).

Henley, Bampton, Thame, Deddington, Bicester, Witney, Chipping-Norton.

Bucks or Buckingham.—BUCKINGHAM 4 (Great Ouse), Great Marlow 6 (Thames), Aylesbury 6 (Thame).

Eton, Olney, Newport-Pagnell, Stony Stratford, Chesham, Slough, High Wycombe, Amersham, Ivinghoe, Wendover, Princes-Risborough.

Bedford.—BEDFORD 17 (Great Ouse), Luton 10 (Lea).

Potton, Biggleswade, Leighton-Buzzard, Dunstable.

Herts or Hertford.—HERTFORD 7, Ware 5 (Lea), Bishop-Stortford 5 (Stort), St Albans 8 (Colne), Hitchen 6 (Hiz).

* Including Hanley, Burslem, and Longton.

Barnet, Watford, Hemel-Hempsted, Berkhampstead, Tring, Baldock.

Middlesex.—LONDON 3252—including the City, Westminster, Marylebone, Finsbury, Tower Hamlets, Southwark, and Lambeth—BRENTFORD, the county town, 9 (Thames).

Hounslow, Twickenham, Hampton, Staines, Tottenham, Enfield, Uxbridge, Harrow, Fulham.

TWELVE WELSH COUNTIES.

Flint.—MOLD 3 (Allen), Holywell 6, Flint 4 (Dee), Rhyl 3 (Clwyd), *Towns between* 1000 *and* 2500.—Rhyddlan, St Asaph, Hawarden.

Denbigh.—DENBIGH 6, Ruthin 3 (Clwyd), Wrexham 9, Llangollen 5 (Dee), Abergele 3 (coast).

Carnarvon.—CARNARVON 9, Bangor 7 (Menai Strait), Conway 3, Llanrwst 3 (Conway), Pwllheli 3, Llandudno 2 (Coast).

Anglesea.—BEAUMARIS 2 (Menai Strait), Amlwch 3 (N. coast), Holyhead 6 (Holy I.)

Merioneth.—DOLGELLY 2 (Maw), Bala 2 (Dee).

Montgomery.—MONTGOMERY 1, Welshpool 7, Newtown 6, Llanidloes 3 (Severn).

Cardigan.—CARDIGAN 4 (Teify), Aberystwith 7 (Ystwith).

Pembroke.—PEMBROKE 14, Haverfordwest 7, Milford 3 (Milford Haven), Tenby 4 (S.E. Coast).

Carmarthen.—CARMARTHEN 10, Llandeilo 5 (Towey), Llanelly 11 (S. Coast).

Glamorgan.—CARDIFF 40 (Severn), Swansea 52 (Tawy), Neath 9 (Neath), Merthyr-Tydfil 97 (Taff).

Brecknock.—BRECON 6 (Usk), Hay 2 (Wye).

Radnor.—NEW RADNOR 2 (Somergill), Presteign 2 (Lugg).

Descriptive Notes.—By the census of 1871 there were in England and Wales fourteen towns having upwards of 100,000 population—(London, Liverpool, Manchester, Birmingham, Leeds, Sheffield, Bristol, Greenwich, Bradford, Newcastle, Salford, Hull, Portsmouth, and Stoke-upon-Trent); twenty between 100,000 and 50,000 (Sunderland, Leicester, Brighton, Preston, Merthyr-Tydfil, Nottingham, Oldham, Bolton, Norwich, Blackburn, Huddersfield, Plymouth, Wolverhampton, Halifax, Southampton, Bath, Stockport, Swansea, Derby, Devonport); forty-eight between 50,000 and 20,000, eighty between 20,000 and 10,000, and one hundred and twenty between 10,000 and 5,000.

THE SEVEN EASTERN COUNTIES.

NORTHUMBERLAND, the most northern county of England, lies between the Tweed on the N. and the Tyne and Derwent on the S. Mountain limestone in the N. and W., millstone grit and the coal-measures in the S.E., extending southward to the Tees in Durham, and forming the most celebrated coal-field in the world, and the source of immense wealth to the mining and manufacturing population of the N.E. of the kingdom. The Tyne flows through the centre of this precious mineral deposit, and

the towns in its basin are all prospering. The Cheviot breed of sheep is celebrated. **Newcastle**, on the Tyne, 10 miles from its mouth, is the centre of the coal trade in the north of England, and the fifth commercial city in the kingdom; being only excelled by London, Liverpool, Bristol, and Hull. There are 50 coal-pits within a distance of 8 miles of it, yielding upwards of 3,000,000 tons annually, and large manufactories of steam-machinery and glass. It is the birthplace of the poet Akenside, and of Lord Chancellor Eldon. **Tynemouth** and **Shields** are the seaports of Newcastle. **Morpeth**, on the Wansbeck, with manufactures of woollen goods and leather. **Berwick**, on the north side of the Tweed, famous in the annals of border warfare, was long independent of both kingdoms, and still enjoys the privileges of a county. **Otterburn**, a village of Northumberland, near which, in 1388, was fought the battle of Chevy Chase, between Percy, Earl of Northumberland, and Earl Douglas.

DURHAM, between the Tyne and the Tees: Millstone Grit, coal-measures, permian, and trias. Famous for its rich coal-deposits, and the Teeswater breed of short-horned cattle. Lead, iron, and grinding-stones are largely exported. Surface mountainous in the W., and covered with heath. A large portion of the land belongs to the bishopric of Durham. **Durham**, on the Wear, the seat of one of the four English Universities, contains a celebrated cathedral, a castle built by William the Conqueror, and has valuable collieries in the vicinity. **Sunderland**, one of the principal ports of England for the shipment of coal. Shipbuilding is extensively carried on; has an immense cast-iron bridge over the Wear, whose single arch is 237 feet in span. **Bishop-Auckland**, the residence of the Bishop of Durham, whose See was the wealthiest in the kingdom till lately, when the revenue was reduced from £22,000 a-year to £8000. **Gateshead**, a suburb of Newcastle, on the opposite side of the Tyne; a great fire in 1854 destroyed much life and property. **Stockton** and **Darlington** are united by one of the earliest constructed railways in the kingdom. **Hartlepool**—steam navigation to Hamburg, Rotterdam, Antwerp, and Scotland.

YORKSHIRE, the largest, and one of the most populous, counties of England (area 5981 sq. m., pop. 2,436,113), lies between the Tees and the Humber; consists of three divisions called Ridings (*thirds*, in Anglo-Saxon)—viz., the North, East, and West Ridings, which all meet at York. It embraces all the geological formations, in regular succession, from the mountain limestone in the W. to the chalk and tertiaries in the E. The West Riding is the chief seat of the mining and manufacturing industry of England, the coal-measures being more accessible there: its fine broadcloths and other woollen fabrics are unrivalled throughout the world: cotton, flax, and silk mills are also very numerous. The North Riding is principally oolitic, and is chiefly famous as a grazing country. The East Riding is, for the most part, cretaceous and tertiary, and comprises the hilly district called "the Wolds." **York**, on the Ouse, near the centre of the county, where the three Ridings converge, is, in point of ecclesiastical rank, the second city in the kingdom, —the Archbishop of York being the highest ecclesiastical dignitary next to the Archbishop of Canterbury; and the cathedral, called York Minster, is the finest structure of the kind in England. **Goole**, at the confluence of the Ouse and Don, and at the termination of the Aire and Calder navigation. **Selby**, the birthplace of Henry I. **Ripon**, where a conference took place between the English and Scottish Commissioners, with a view to adjust the differences between Charles I. and his Scottish subjects, in

1640. **Hull**, or Kingston-upon-Hull, is the fourth commercial city in England; in 1863, 3026 ships entered, carrying about 700,000 tons—its annual exports exceed £12,000,000 sterling, being the great outlet for the manufactures of the West Riding. **Beverly**, capital of the East Riding, contains a beautiful minster, dating from the 13th century—which, like Holyrood, has the privilege of sanctuary. **Doncaster**, on the Don, famous for its annual races. **Sheffield**, noted for cutlery and plated goods, in which it is second only to Birmingham. **Barnsley**, on the Dearne, the chief seat of the linen trade. **Rotherham**, at the confluence of the Don and Rother, has manufactures of all kinds of iron goods, including cannons, machinery, &c. **Pontefract** (Pomfret), with a famous castle now in ruins, where Richard II. died. **Leeds**, **Bradford**, **Halifax**, and **Huddersfield**, with the other towns in the basin of the Aire, are the principal seat of the woollen trade, for which the West Riding is so celebrated. Leeds alone has 106 woollen mills. **Bradford** has colleges for Baptists, Independents, and Wesleyans, and is the principal seat of the worsted-yarn manufacture. **Knaresborough**; in the vicinity is the far-famed "dropping-well," of strongly petrifying quality. **Scarborough** and **Harrogate**, famous for their mineral waters, which are highly medicinal. **Whitby**, an important seaport town, on the Esk, the birthplace of Captain Cook, the navigator.

LINCOLNSHIRE, between the Humber and the Wash, contains all the geological formations in regular succession, from the lias in the W. to the tertiary in the E. and S.; it consists of three widely different districts—viz., the *moors* in the W., the *wolds* in the N.E., and the *fens* in the S. and E. The *fens* are a part of the celebrated Bedford Level—an immense swamp partially drained two centuries ago by the Earl of Bedford, and the remainder recently by the British Government—and form the best pasture-land in England. The *wolds* are a line of chalk downs, which extends from Flamborough Head to the coast of Dorsetshire. The *moors* are now mostly cultivated. **Lincoln**, the capital, on the Witham, is noted for its beautiful cathedral, which contains a gigantic bell called Tom of Lincoln. At the time of the Conquest, the Witham was navigable for large vessels up to the town, and Lincoln formed then one of the principal seaports in the kingdom. **Boston** has a fine church, with a tower that serves as a lighthouse for the navigation of the Wash. **Spalding** was a place of some consequence even in Saxon times. **Stamford** and **Louth** send large quantities of corn to London. **Great Grimsby** has a fine harbour and extensive docks. **Gainsborough**, on the Trent, with considerable inland trade, exports hardware and manufactured goods.

NORFOLK, between the Wash and the Waveney.—Principally cretaceous, but tertiary in the E.; coast-line low, surface level; soil, a light sandy loam, well fitted for barley and turnips, which constitute the principal crops: extensive manufactures of woollen and silk fabrics; great numbers of turkeys and geese are reared for the London market. **Norwich**, on the Yare, the finest city in the E. of England, was the birthplace of Dr Samuel Clarke and of Archbishop Parker, long famous for its worsted manufactures, first introduced by the Flemings in the sixteenth century, and now for its bombasines and crape; has a huge cathedral, with a spire 315 feet high. **Yarmouth**, also on the Yare, noted for its herring-fishery, the most important in England, and for its roadstead, lying between the coast and a dangerous sandbank in the vicinity. **Lynn-Regis**, or King's-Lynn, on the Great Ouse, here 1000 feet broad.

SUFFOLK, between the Waveney and the Stour.—Chalk in the W., tertiary in the E.; surface level, and soil well cultivated, producing wheat,

barley, beans, oats, turnips, hemp, and hops. **Ipswich**, with extensive iron and silk manufactures, is the birthplace of Cardinal Wolsey. **Sudbury**, on the Stour, sent two members to the House of Commons, but was lately disfranchised for bribery. **Lowestoft**, the most eastern town in the British Isles. **Bury St Edmund's** has a large corn and cattle market, which lasts for three weeks.

ESSEX, between the Stour and the Thames.—Almost wholly tertiary; surface flat and marshy in the S., but richly wooded and beautifully diversified in the centre and N.; soil rich, and famous for its wheat crops. **Chelmsford**, at the confluence of the Chelmer and Cann, and on the Great Eastern Railway. **Maldon** exports fish and agricultural produce. **Saffron-Walden**, so named from the *saffron* plant, formerly cultivated here. **Colchester**, on the Colne, crossed here by seven bridges; its manufactures of silk are declining. **Halstead**, with manufactures of silks, velvets, satins, and straw-plait. **Harwich** has the finest harbour on the east coast of England, and steam communication with Rotterdam.

THE TEN SOUTHERN COUNTIES.

KENT, between the Thames and the Rother.—Tertiary in the N., chalk and greensand in the centre and E., and the wealden, a fresh-water deposit, in the S.; surface hilly—two small ranges traverse the county from W. to E.—but the S. low and level, containing Romney Marsh and "the Weald;" soil and climate excellent, and agriculture in a highly advanced state, with products more varied than any other English county; wheat, barley, and hops of very superior quality, and numerous orchards of cherries, plums, and filberts. **Maidstone**, on the Medway, the chief seat of the hop trade. **Sheerness**, **Chatham**, **Woolwich**, and **Deptford**, with royal dockyards and arsenals. **Tunbridge Wells**, with medicinal waters, a fashionable resort for the Londoners. **Hythe**, **Dover**, **Romney**, and **Sandwich**, four of the five Cinque Ports (Hastings in Sussex being the fifth). **Folkestone**, the birthplace of Harvey, the discoverer of the circulation of the blood. **Dover**, on the Strait of Dover, is only 21 miles from the French coast, and is the chief point of communication between England and the Continent. **Deal**, near the Goodwin Sands, maintains a numerous staff of pilots for steering vessels through the Downs. **Ramsgate**, **Margate**, and **Gravesend**, convenient resorts for the population of London. **Canterbury**, the ecclesiastical cap. of England, was a place of some importance in the time of the Romans, and afterwards the cap. of the Saxon kingdom of Kent. The Archbishop of Canterbury is the primate of England, and, after the royal family, ranks as the first peer of the realm. **Greenwich** is celebrated for its naval hospital, and its royal observatory, from which the longitude on all British maps and charts is reckoned.

SUSSEX ("South Saxons"), between the Rother and Chichester Harbour. The wealden in the N. and E., greensand, chalk, and tertiary in the W. and S.; surface diversified; "the Weald" is level, moderately fertile, and from time immemorial famous for its forests; the South Downs—a range of chalk hills—traverse the cretaceous portion from W. to E., terminating at Beachy Head. South of the Downs there is a considerable tract of fertile soil belonging to the tertiary formation. Climate mild, and harvests early, but agriculture in a rather backward state; hops extensively raised in the E. The breeds of cattle and sheep are in high repute. **Chichester**, on the Lavant, in the S.W. of the county, occupying a fine situation at the foot of the South Downs, is the birthplace of

William Collins. **Brighton**, a romantic and beautiful town, the gayest of English watering-places, with an extensive marine promenade. **Hastings**, the principal of the Cinque Ports, the scene of a famous battle, in 1066, between Harold II., the last Saxon king, and William the Conqueror. **Lewes**, where Simon de Montfort and the barons defeated Henry III. in 1264.

SURREY, between Sussex and the Thames.—Weald in the S., greensand and chalk in the centre, and tertiary in the N. The North Downs run from W. to E.; the W. largely covered with heath, but fertile soil in the tertiary part. A large portion under tillage, and hops extensively raised; another large portion laid out as kitchen-gardens, for supplying the metropolis with vegetables; woods extensive, but agriculture backward. **Guildford**, on the Wey, and 17 miles from London, has considerable traffic in corn, malt, and coals. **Deptford**, partly in Kent, with large naval arsenal and dockyards. **Southwark** and **Lambeth** now form parts of London; in the latter is Lambeth Palace, the residence of the Archbishop of Canterbury. **Richmond**, with a celebrated park, is the burial-place of Thomson the poet, and of Kean the tragedian. **Kingston**, where the first armed force in the Parliamentary war assembled.

BERKS, between Hampshire and the Thames. Coral-rag in the N., greensand and chalk in the centre, and tertiary in the S. A tract of chalk downs extends through the centre; Windsor forest and park in the E.; soil fertile; agriculture backward; manufactures unimportant, but extensive trade in agricultural produce. **Reading**, the birthplace of Archbishop Laud. **Windsor**, celebrated for its palace and park; the former, the most magnificent regal palace in the kingdom, was founded by the Conqueror, and is the favourite residence of the sovereign; the latter, containing Windsor Forest, is 56 miles in circumference.

HANTS, chiefly included between Chichester Harbour and the Hampshire Avon. Chalk in the N., tertiary in the S. The North and South Downs traverse the county, and the south coast is deeply indented; for the most part well wooded, with extensive forests of oak and birch; soil good, and generally well cultivated, producing excellent hops; its cider and bacon in high repute. The Isle of Wight, which is tertiary in the N. and greensand and weald in the S., is considered the garden of England. **Winchester** was long the capital of England; here many of the Saxon princes are interred. **Southampton**, the entrepôt for some of the greatest ocean steam lines in the world: here the mails are made up and despatched to the East and West Indies, China, and the Mediterranean. **Andover**, one of the largest cattle-markets in England. **Portsmouth**, the headquarters of the British royal navy, with extensive dockyards and arsenal; the harbour unequalled in the kingdom, and the fortress considered impregnable. **Newport**, the capital of the Isle of Wight.

WILTS, N.W. of Hants and S. of the Thames. Oolitic in N. and W., cretaceous in the S. and E. The centre is occupied by the elevated tableland of Salisbury Plain, in which nearly all the rivers of the county rise; soil highly fertile, especially in the extreme N. and S., but the central plateau produces only scanty herbage; the most remarkable objects here are the far-famed Druidical remains of Stonehenge and Avebury, on which much antiquarian research has been expended. **Salisbury**, with a magnificent Gothic cathedral; the spire, the highest in Britain, rises to a height of 404 feet. **Devizes**, **Bradford**, **Trowbridge**, **Chippenham**, and **Westbury**, have extensive manufactures of woollens and fine cloths. **Amesbury**; near it are Stonehenge, and Milston Rectory, the birthplace of Addison.

DORSET, on the English Channel, for the most part between the Hampshire Avon and the Lyme.—Cretaceous in the E., and oolitic in the W. Surface level in the N., but traversed by chalk hills in the centre, where numerous flocks of sheep find pasture. Dairy produce highly important. and large commerce in Portland and Purbeck stone, coarse marble, and potter's clay. **Dorchester**, a place of great antiquity, with the remains of a huge Roman amphitheatre. **Poole**, a large seaport, largely engaged in the Newfoundland fishery. **Bridport**; shipbuilding, cordage, fishing-nets, and sailcloth. **Sherborne**, the birthplace of Sir W. Raleigh.

SOMERSET, between Dorset and the Bristol Channel.—Greatly diversified, and embracing all the formations from the old red to the oolite. Coast-line and surface irregular; the Mendip and Quantock hills divide the county into three divisions; fertile along the rivers, and there dairy husbandry is pursued with great success, but in other parts there are extensive wastes, as Exmoor in the W. Coal, calamine, iron, lead, and fuller's earth are obtained: the principal manufactures are woollens, silks, linens, paper, glass, and iron-wares. Many antiquities. **Taunton**, where Judge Jeffreys held the bloody assize after the battle of Sedgemoor. **Bath**, on the Lower Avon, long the most fashionable watering-place in the kingdom, is one of the most beautiful cities in Europe. **Frome**, long noted for its ale. **Wells**, with a noble cathedral, erected in the thirteenth century. **Bridgewater**, the birthplace of Admiral Blake, is noted for its high tides. **Weston-super-Mare**, from an insignificant village, has risen into a favourite watering-place.

DEVON, between the English and Bristol Channels.—The centre and W. carboniferous, and the seat of some of the most valuable mines in England, especially copper and tin; the S. and extreme N., Devonian; New red and greensand in E.; surface greatly broken, but generally fertile, except Exmoor and Dartmoor. The climate in winter is very mild, the average temperature being 44°. Most kinds of grain are raised, and the county is famed for its cider. The red Devon breed of cattle is highly valued. Herring, pilchard, mackerel, and dory fisheries important. **Exeter**, a fine old town with a beautiful cathedral, and the birthplace of the poet Gay. **Plymouth** and **Devonport**, closely contiguous, are principal stations of the royal navy; noted for a naval arsenal, and for a stupendous breakwater which cost £1,200,000. **Tavistock**, the birthplace of Sir Francis Drake, and of William Browne the poet. **Torquay** (Torkeé), on Tor Bay, the resort of numerous invalids. **Barnstaple** has considerable trade in timber with Canada and the Baltic.

CORNWALL, in the extreme S.W. of the kingdom.—Devonian for the most part, interspersed with igneous rocks, but carboniferous in the N.E.; surface rugged; soil indifferent; scantily timbered; climate mild, salubrious, but very humid. Its tin mines are the most celebrated in the world, and have been wrought from remote antiquity. The metalliferous district extends from Dartmoor, in Devonshire, to Land's End; but the richest mines are in the S.W. of the county. Copper is also abundant; and lead, silver, zinc, iron, manganese, antimony, cobalt, and bismuth exist in many localities. **Bodmin**, on the Camel, engaged in the manufacture of coarse woollen stuffs. **Camborne**, **Redruth**, and **Marazion**, with valuable copper-mines. **St Ives** and **St Agnes**, famous for their unrivalled tin mines. **Penzance**, **Truro**, and **Launceston**, are called the "Stannery towns," being those to which the miners carry their blocks of tin, in order to be stamped by Government agents. **Falmouth**, a favourite resort of our fleets in time of war, and a mail-packet station.

The Seven Western Counties.

Monmouth, between the Wye and the Rumney.—Devonian for the most part, but carboniferous in the extreme W. and E.; surface picturesquely varied with hill and dale, and finely wooded; coal, ironstone, and limestone abundant; flannel the chief manufacture; many British and Roman remains; the Welsh language and manners prevalent; and in general the county may be considered as rather Welsh than English. **Monmouth**, on the Wye, the birthplace of Henry V., and of Geoffrey of Monmouth the annalist; with extensive manufactures of bar-iron, tin-plates, and paper. **Newport** exports coal, iron, and tin, which are conveyed hither from South Wales; large trade in shipbuilding and iron-foundries. **Tredegar**, noted for its coal-mines and ironworks.

Herefordshire, in the basin of the Severn.—Almost wholly Devonian; surface beautifully diversified, and presenting some of the finest scenery in England, especially in the S.W., and in the Malvern Hills; soil fertile and admirably adapted for agriculture; climate remarkably healthy; apples, hops, and oak bark are important articles of commerce; and the breeds of sheep and cattle are celebrated for their excellence. **Hereford** (Her'-e-ford) on the Wye, the birthplace of David Garrick, the comedian, and of Nell Gwynn, the favourite mistress of Charles II. **Leominster** (Lem'-ster), famed for the quality of its cider, and for manufactures of leather, gloves, hats, and woollen.

Salop, in the basin of the Severn.—Silurian strata, containing lead mines in the S.W., new red sandstone, with rock-salt, in the N., and Devonian beds and coal in the remainder; surface mountainous in the S., comparatively level in the N.; fine meadow-lands near the Severn; hops and orchards in the S., coal and iron in the E., lead in the W., and salt in the N. The manufactures are, china ware, flannels, carpets, linen, gloves, and paper. A good deal of cheese is made, and large flocks of turkeys are reared. **Shrewsbury**, on the Severn, where a bloody engagement took place, in 1403, between the troops of Henry IV. and the Percies, in which Hotspur was killed. **Bridgenorth**, extensively engaged in the carpet manufacture. **Broseley**, noted for its iron-foundries (known as the Colebrookdale works); a suspension-bridge over the Severn here was the first erected in England; near it is **Colebrookdale**, famous for its petroleum or tar springs.

Cheshire, a maritime county between the Mersey and the Dee.—Nearly all of new red sandstone, containing an inexhaustible supply of rock-salt; surface level, well wooded, and studded with many small lakes; soil, clay or sandy loam; climate moist. The county is noted for its dairy produce, and especially for its cheese. Coal, copper, lead, rock-salt, and cobalt are among its mineral products, and the principal manufactures are cottons and silks. **Chester**, on the Dee, exports cheese in large quantities, and is the burial-place of Matthew Henry the commentator, and of the poet Parnell. **Birkenhead**, a new town on the estuary of the Mersey, opposite Liverpool, fast rising into importance. **Stockport** has coal abundant in the vicinity, and large manufactures of cotton, silk, machinery, brass, and iron goods. **Staley Bridge**, extensively engaged in the cotton manufacture. **Macclesfield** employs 10,000 hands in silk-weaving. **Crewe**, on the London and North-Western Railway, is a great railway depôt.

Lancashire, a maritime county between the Mersey and Morecambe Bay.—Mainly carboniferous, but new red sandstone in the W., lined

with post-tertiary deposits; mountainous in the N. and along the E. border, elsewhere generally level; climate mild but very humid; pasture-lands more extensive than the arable; potatoes extensively cultivated, and horticulture largely pursued. Copper, ironstone, and lead ore prevail extensively; but the county owes its celebrity, wealth, and population to its manufactures and commerce. It is the grand seat of the cotton manufacture, which has increased since 1770 with a rapidity altogether unparalleled in the history of industry. Woollen, flax, and silk factories are also numerous. During the last hundred years the population (now 2,818,904) has increased eightfold. A complete network of railways, and several important canals, afford means of rapid conveyance to all parts of the kingdom. **Lancaster**, on the Lune, with a superb aqueduct over the river. **Liverpool**, a large and flourishing city, and the second commercial port in the kingdom, is situated on the estuary of the Mersey, about four miles from its mouth, and 32 miles from Manchester, with which it is connected by railway. It carries on a vast maritime trade, especially with the United States, importing thence cotton wool, and exporting cotton cloth. In 1869, 23,938 ships entered and cleared the port, with a tonnage of 9,277,714 tons. In 1860, before the American war began, the cotton imported into Liverpool amounted to 1,417,000,000 lb. Liverpool is the chief outlet for the manufactures of Lancashire, Staffordshire, and the west of Yorkshire. **Manchester**, on the Irwell, across which it communicates by six bridges with **Salford**, which may be regarded as its suburb; united population, 480,000. It is the great centre of the cotton manufacture, and probably the greatest manufacturing city in the world. The other principal "cotton towns" in the county are **Preston, Blackburn, Burnley, Wigan, Chorley, Ashton-under-Lyne, Oldham, Bury, Middleton, Bolton**, and **Rochdale**.

WESTMORLAND, between the Pennine Hills and Morecambe Bay, is only very partially a maritime county.—Cumbrian strata in the W., silurian in the centre, carboniferous in the E., and Permian in the N.; a country of mountains, lakes, and picturesque scenery; climate humid; soil various, and agriculture improving; cattle of large size, sheep numerous, their wool being sent to the Yorkshire woollen manufactories; great flocks of geese raised for exportation; slate is quarried in great quantities, as also granite, marble, copper, and lead; char, and other lake fish, extensively exported. **Appleby**, on the Eden; the castle held out long against the Parliamentary army under Oliver Cromwell. **Kendal**, on the Ken, one of the oldest manufacturing towns in the kingdom; its cloths, manufactured by Flemish weavers, were famous in the time of Richard II.

CUMBERLAND, a maritime county in the extreme N.W., between the Pennine chain and the Irish Sea. An extensive area of Cumbrian strata in the S., with igneous rocks interspersed; carboniferous, Permian, and triassic in the centre and N.; surface rugged and mountainous, interspersed with beautiful lakes, presenting the most magnificent scenery in England. Climate extremely moist: Seathwaite, where 183 in. of rain fell in 1861, and at the Stye 224 in. in 1866, are perhaps the rainiest districts in Europe. In consequence of this extreme moisture, agriculture is chiefly confined to stock-breeding; and green crops attain to great perfection, especially Swedish turnips. Principal minerals are silver, copper, lead, iron, and coal. Near Whitehaven are extensive beds of coal and hæmatite, and at Borrowdale there is a mine of plumbago. The chief manufactures are cottons, coarse linens, checks, and woollens; and the lakes yield abundance of char, trout, pike, and perch. **Carlisle**, an episcopal

see on the Eden, surrendered to the Highland army under Prince Charles, in 1745. **Penrith** has manufactures of cotton, linen, and woollen goods. **Whitehaven** exports great quantities of coal, and of the iron-ore called hæmatite: the coal-mines extend a long way under the sea. **Maryport** and **Workington** have considerable trade in coal. **Cockermouth**, the birthplace of the poet Wordsworth. **Keswick** manufactures black-lead pencils from the plumbago mines of Borrowdale. Here Southey the poet spent his last years and died.

The Sixteen Midland Counties.

Derby, a central county in the basin of the Trent. Chiefly carboniferous, but new red sandstone in the S. Surface mountainous in the N., where the Pennine range terminates in the Peak of Derby; elsewhere level. The Peak district abounds in romantic scenery, in natural curiosities, and in lead-mines. Climate bracing and salubrious; soil reddish clay or marl in the S., where grain and great quantities of cheese are produced. The county is singularly rich in minerals; coal, lead, iron, gypsum, marble, and fluor-spar are wrought to a great extent. Collieries and ironworks numerous; principal manufactures, silk, cotton, metallic goods, and porcelain. **Derby**, on the Derwent, at the extremity of a coal-field, and on the Midland Railway, is favourably situated for manufactures and trade—noted for its silks, porcelain, marble and fluor-spar ornaments. **Belper**, with large cotton factories and potteries. **Chesterfield**, lace and silk manufactures; with mines of iron, coal, and lead in the vicinity. **Glossop**, near the Peak of Derby, is the chief seat of the cotton manufacture in the county. **Matlock** and **Buxton**, celebrated for their mineral waters. **Wirksworth**, with an extensive and valuable lead-mine, is regarded as the mining capital of Derbyshire.

Notts, a central county in the basin of the Trent. Coal and Permian in the W., lias in S.E., and millstone grit in the remainder. Surface diversified; climate remarkably dry, probably owing to the Derbyshire hills intercepting the moist S.W. winds; soil either clayey or light and sandy; agriculture well advanced; minerals abundant, especially coal and limestone. It is the principal seat of the cotton hosiery, and of lace-manufactures. **Nottingham**, on the Trent, is the great centre of the lace manufacture. **Newark**, where Charles I., after his defeat at Naseby, surrendered himself to the Scottish army. **Mansfield**, manufactures of cotton hosiery and lace, and a large trade in malt. **Worksop**, in a district called "The Dukery," a number of noblemen having their mansions here.

Stafford, a central county in the basins of the Trent and Severn. Principally carboniferous, but new red sandstone in the centre; surface level in the centre, hilly in the S., moorland in N.E. Climate chilly, owing to the elevation; much rain in some parts; two-thirds of the surface cultivated, but farming less important than the mining operations, in which this county holds the third rank in England. There are two very valuable coal-fields, one in the N., called the pottery coal-field, owing to the great number of potteries that have been established on it; and the other in the S., called the Dudley coal-field, celebrated for the thickness of its seams of coal, and for the excellence and richness of its iron ores. Besides coal, the most important mineral product is the pottery clay, which has made the county so celebrated for its earthenware. **Stafford**, on the Sow, the birthplace of Isaac Walton. **Burton-on-Trent**, famous for its ales, has a bridge over the river reckoned the

longest in England, with thirty-seven arches. **Newcastle-under-Lyne,** noted for its hats—near it **Etruria,** the famous pottery establishment of Josiah Wedgwood. **Stoke-upon-Trent, Hanley,** and **Burslem,** with some other towns in the vicinity, are called "The Potteries," owing to their immense manufacture of earthenware. **Lichfield,** the birthplace of Samuel Johnson. **West Bromwich, Walsall,** and **Bilston,** with great ironworks. **Wolverhampton,** noted for its furnaces and hardware manfs.

LEICESTER, an inland county in the basin of the Trent. Some coal in the W.; new red, with igneous rocks, in the centre, and lias in the E. Surface undulating—a fine grazing county, noted for its sheep, horses, and cattle, and for Stilton cheese. It is the principal seat of the woollen hosiery manufacture. The principal minerals are coal, iron, and lead. **Leicester** (Les'-ter), on the Soar, the principal seat of the woollen hosiery manufacture. **Loughborough,** hosiery of all kinds. **Hinckley,** cotton and worsted stockings.

RUTLAND, the smallest county in England (area 152 sq. m.), in the basins of the Trent and Welland. Lias in the western half, and oolite in the eastern. Surface undulating and diversified with parks; the eastern half chiefly under tillage, and western half under pasture; soil everywhere loamy and rich; great attention is paid to the rearing of sheep and oxen. **Oakham** manufactures silk shag for hats. **Uppingham,** a small town on the Welland.

WORCESTER, in the basin of the Severn. New Red in W., lias in centre, and oolite in the E.; some coal found in N. Surface generally level, but having the Malvern Hills in S.W., and the Bredon Hills in S.E. Soil fertile, well watered, and richly wooded; wheat and hops extensively raised, and orchards numerous. Principal minerals are coal, found at Dudley, building-stone, and clay. The New Red at Droitwich contains brine-springs. Manufactures, carpets, glass, ironware, gloves, porcelain, needles, and fish-hooks. **Worcester** (Woos'-ter), on the Severn, a handsome and very ancient city, noted for its porcelain, reckoned the finest in England. **Kidderminster,** producing the finest carpets in England. **Stourbridge** has manufactures of glass and earthenware. **Dudley,** in the "Black Country," has a famous coal-field, part of which has been on fire for a century; is one of the principal seats of the iron trade. **Stourport** is the seat of a busy trade in corn, coal, and timber.

WARWICK, in the basins of the Severn and Trent. Lias in S., new red in the centre, carboniferous and Permian in the N. Surface elevated, and diversified by gentle hills and vales; climate mild and salubrious; soil generally very fertile and well cultivated, and a great part of it in permanent pasture. The most valuable minerals are coal, limestone, sandstone, blue flagstone, and marl. Manufactures very important, especially hardware, arms, watches, jewellery, silk, and ribbons. **Warwick** (Wor'-ric), on the Upper Avon. The castle, once the residence of the Earl of Warwick, is the most complete specimen of a feudal fortress in the kingdom. **Stratford,** also on the Avon, the birthplace of the immortal Shakespeare. **Rugby,** with a celebrated school, the scene of Dr Arnold's labours, stands in the exact centre of England. **Leamington** (Lem'-ington), a fashionable watering-place, with sulphureous, saline, and chalybeate springs. **Coventry** and **Nuneaton,** the chief seat of the ribbon manufacture. **Birmingham,** on the Rea, an affluent of the Tame, and a sub-tributary of the Trent, is the second manufacturing city in England, and for hardwares the first in the world. It has been called "the great toy-shop of Europe," but it is equally famous for all descriptions of hardware, firearms, and crown-glass. It is surrounded by extensive coal-

pits and iron-works, and is one of the main centres of canal and railway communication in England. Here electro-plating was invented; and at Soho in the vicinity is the greatest manufactory of steam-engines in the world, conducted by a firm of which the celebrated James Watt was a partner.

NORTHAMPTON, a central county, drained by the Nen, Welland, and Ouse. Almost wholly oolite and lias. Surface diversified and richly wooded; soil mostly a stiff productive loam; climate healthy; agriculture well advanced, the chief staple being the breeding of heavy black horses, short-horned cattle, and sheep; chief manufactures—shoes, bobbin-lace, and woollen stuffs. **Northampton**, on the Nen, the chief seat of the boot and shoe manufacture. **Peterborough**, an episcopal see, the birthplace of Dr Paley; the cathedral, a splendid edifice, contains the tomb of Queen Catharine, first wife of Henry VIII. **Wellingborough**, with boot, shoe, and lace manufactures. **Kettering**, silk-weaving, plush, and wool-combing. **Naseby**, a country parish, 12 miles N.N.W. of Northampton; here in 1645 the troops of Charles I. were totally defeated by the Parliamentary army. **Fotheringay**, 3½ miles N.N.E. of Oundle; its castle is famous as the birthplace of Richard III., and as the scene of the imprisonment, trial, and execution, in 1587, of Mary Queen of Scots.

HUNTINGDON, sometimes called Hunts, an inland county in the basin of the Ouse. Almost wholly oolitic, but post-tertiary in N.E. Surface gently varied where the oolite prevails, the rest level, and forming a part of "The Fens." Climate mild and healthy, except in the fens; soil good and almost wholly under cultivation, with agriculture in an advanced state, especially in the Bedford Level or fens district; horses extensively bred, and much "Stilton cheese" made. Manufactures unimportant. **Huntingdon**, on the Great Ouse, the b.-place of Oliver Cromwell in 1599; has extensive breweries, and considerable trade in corn, wool, coals, and timber. **St Ives**, large sheep and cattle markets.

CAMBRIDGE, in the basins of the Great Ouse and Nen. Post-tertiary in the N., oolitic in the centre, greensand and chalk in the S. and E. Surface level, marshy, and thinly wooded, and the fens liable to inundation; about a third of the county under tillage, the rest forming excellent pasture. The butter of Cambridge and Epping, and the cheese of Cottenham, are highly valued; but, on the whole, agriculture is rather backward, and the houses of the peasantry wretched: with the exception of some pottery-ware, there are no important manufactures. **Cambridge**, on the Cam, is the seat of a celebrated university, founded in the seventh century, and consisting of sixteen colleges and one hall. It is principally renowned for mathematics and natural philosophy. **Ely**, a bishop's see, with a splendid cathedral—the only episcopal city in England which sends no member to Parliament. **Wisbeach**, an active river port, engaged in shipbuilding.

GLOUCESTER, in the basin of the Severn. Principally oolite and lias, but carboniferous and new red in the W.; naturally divided into three divisions—viz., the valley of the Severn in the middle, the Cotswold Hills in the E., and the forest of Dean in the W. The first is highly fertile, and the scenery beautiful; the second is celebrated for its sheep-farming. The county is chiefly agricultural, but it is also noted for its cheese, which is nowhere surpassed. The principal minerals are coal and iron; and the manufactures chiefly woollen and cotton cloth. **Gloucester** (Glos'-ter), a bishop's see, on the Severn, has a fine cathedral, and manufactures of cutlery, soap, and pins. **Tewkesbury**, the scene of a decisive battle between the houses of York and Lancaster in 1471. **Bristol**, on

the Lower Avon, is the third seaport in England, and the commercial metropolis of the west. The fine flannels of Wales are finished here; extensive iron and brass foundries; the birthplace of many eminent persons, among whom William of Worcester, Sebastian Cabot, Chatterton, Bayley, and Southey. **Stroud**, on a river of same name, the water of which is peculiarly adapted for dyeing scarlet, is the centre of the Gloucester wool-manufacture. **Cheltenham**, with its saline medicinal springs, is the rival of Bath as a watering-place. **Cirencester**, (Sis'-e-ter), a very ancient town, had some importance in the time of the Romans. **Berkeley**, the birthplace of Dr Edward Jenner, the discoverer of vaccination.

OXFORD, in the Thames basin. Principally oolite and lias, but greensand and chalk in the S.E.; surface mostly level or undulating, except in the S., where it is traversed by the Chiltern Hills; soil a fertile loam in the N., elsewhere gravelly; four-fifths of the county under cultivation; stock of sheep large; dairy produce excellent; minerals unimportant; manufactures—lace, gloves, and blankets. **Oxford**, on the Cherwell, with a celebrated university consisting of nineteen colleges and five halls, principally renowned for classical learning; annual revenue, £457,000. The Bodleian library contains 220,000 printed, and 20,000 MS. volumes. Oxford formed the headquarters of Charles I., and the scene of the martyrdom of Cranmer, Ridley, and Latimer. **Banbury**, noted for its cheese, and for cakes, which bear its name. **Woodstock**, celebrated for its gloves; gives name to one of Scott's novels: near it Blenheim, the magnificent seat of the Duke of Marlborough.

BUCKS, in the basins of the Great Ouse and Thames. Oolite in the N., greensand and chalk in the S.; surface undulating in the N., occupied by the Chiltern Hills in the S.,* and in the centre by the rich vale of Aylesbury, one of the most fertile in the kingdom; well wooded; yields large quantities of butter and cheese, with sheep and poultry—the sheep being noted for the weight and fineness of their fleeces; minerals of little importance, but manufactures considerable, consisting of paper, straw-plait, and thread-lace. **Buckingham**, on the Great Ouse, which nearly surrounds it, has manufactories of paper and bobbin-lace; near it is **Stowe**, the splendid residence of the Duke of Buckingham. **Eton**, the seat of the most famous school in England, founded by Henry VI. in 1440. **Great Marlow**, silk, lace, and paper. **Aylesbury**, in the centre of the county, has a better right than Buckingham to be regarded as the county town.

BEDFORD, in the basin of the Great Ouse. Oolite in the N., greensand and chalk in the S.; surface level, except around the Chiltern Hills in the S.; soil various, from the stiffest clay to the lightest sand; chiefly under tillage, but agriculture not in an advanced state; culinary vegetables extensively cultivated in the sandy and chalky districts for the London and Cambridge markets; onions and cucumbers of the best quality are extensively raised; minerals unimportant; and the manufactures chiefly consist of straw-plait for hats, reckoned but little inferior to that brought from Tuscany, and of pillow-lace. **Bedford**, on the Great Ouse, noted for its straw-plaiting; near it **Elstow**, the birthplace of John Bunyan; and **Cardington**, where John Howard resided. **Luton, Biggleswade, Leighton-Buzzard**, and **Dunstable**, all extensively engaged in the straw-plait and straw-hat manufacture.

* The office of Steward of the Chiltern Hundreds, though now a sinecure, is still retained, to enable members of the House of Commons to vacate their seats by accepting it, as it is unconstitutional for members to demit their office more directly.

HERTS, in the basins of the Thames and Great Ouse. Nearly all cretaceous, but tertiary in the S.; soil various, often intermixed with flint, and of average fertility; principal crops—wheat, barley, turnips, apple and cherry orchards; minerals of no importance; principal manufactures—paper and straw-plait; much malting is carried on. **Hertford** (Har'ford) on the Lea; near it Haileybury College, where, till 1858, young men were trained for the service of the East India Company. **Ware**, at the head-springs of the New-River, which supplies the north of London with water. **St Albans**, an ancient town, was the scene of two battles between the rival houses of York and Lancaster in 1455 and 1461; the church contains the remains of the celebrated Lord Bacon.

MIDDLESEX, in the Thames basin. Wholly tertiary, being the lower eocene or London clay, which consists of a tenacious brown or bluish-grey clay replete with fossils, especially at Highgate Hill, near London; surface almost perfectly level, except the slight eminences of Hampstead, Highgate, and Harrow-on-the-Hill; soil various; agriculture in a backward state, but improving; grass-farms, for the supply of London with hay and milk, greatly exceed in extent the arable portion; market-gardens extensive, and a large portion occupied by villas, commons, and pleasure-grounds; minerals of no importance, except clay for brick-making. **London**, on the Thames, the capital of England, and the metropolis of the British empire, is probably the largest, and certainly the wealthiest and most commercial city in the world. Population (in 1871), 3,252,000; occupying a surface of 122 sq. m. This immense population is nearly equal to that of the entire kingdom of Scotland, and exceeds the aggregate population of the 15 next largest towns in England. The population doubles itself in about 40 years. There are 900 churches and chapels, 250 public and 1500 private schools, 150 hospitals, 156 almshouses, 250 other institutions of a similar character, 550 public offices, 14 prisons, 22 theatres, 24 markets, 100,000 establishments of trade and industry, besides an immense number of public-houses, hotels, eating-houses, and beer-shops. The foreign exports in 1860 amounted to £30,837,000, and the imports to £80,000,000; customs revenue, £12,000,000. In 1869, 40,162 ships entered and cleared the port, of 10,529,068 tons burden. There are six bridges across the Thames—viz., London, Southwark, Waterloo, Westminster, Blackfriars, and Vauxhall bridges; three railway bridges, and two tunnels under the bed of the river—one two miles below London Bridge, and the other (opened in 1870) at the Tower. The most conspicuous public buildings are St Paul's Cathedral (a noble structure of Grecian architecture, 510 feet long, 250 broad, with a dome 370 feet high); the Mansion House; the Bank; Royal Exchange; General Post-Office; India, Custom, and South-Sea Houses; Mint; Christ's and Bartholomew's Hospitals; Westminster Abbey; Houses of Parliament; British Museum; University College and Hospital; Somerset House; St James's and Buckingham Palaces. Among its principal scientific associations are the Royal Society, Royal Antiquarian, Linnean, Horticultural, Medical and Chirurgical, Geological, Geographical, Astronomical, Asiatic, Zoological, Ethnological, and Statistical Societies. There are 12 daily newspapers, and 130 others, with 500 other periodicals. Breweries and distilleries are on an immense scale; but Southwark and Lambeth are the great workshops, with large iron-works, tanneries, breweries, glass-works, patent shot and steam-engine manufactories. Silk-weaving is confined to Spitalfields; watch-making chiefly to Clerkenwell; shipbuilding to Wapping, Rotherhithe, Deptford, and Blackwall; cutlery of the finest quality is produced in many parts. In

Druidical times **Londinium** was first the capital of the Cantii, and afterwards of the Trinobantes. It was called **Augusta** in Roman times, and was the central point from which all the Roman roads in Britain diverged. After the departure of the Romans, it was the capital of the **East Saxons** till A.D. 871, when it became the capital of England under **Alfred** the Great. It obtained its first royal charter from William the Conqueror in the eleventh century; in 1665 the great plague cut off 100,000 of the inhabitants, and one year afterwards it was nearly all destroyed by fire. The other towns in Middlesex are of little importance. **Fulham** is the site of the palace of the Bishop of London. **Brentford**, the nominal capital of the county Middlesex. **Chelsea**, 4½ miles from St Paul's, noted for its hospital for superannuated soldiers.

The Twelve Welsh Counties.

Flint, a maritime county in the N.E., bounded by the Dee and Clwyd. Chiefly carboniferous, with a patch of new red in the N.W. Surface level in the N., and elsewhere diversified by a range of hills running from S. to N. Soil fertile in the low grounds, and but only partially under tillage. Its lead-mines are the most valuable in the empire, and those of copper and coal of great importance. Manufactures, cotton and some flannel. **Mold**, on the Allan, a small town, with coal and lead mines. **Holywell**, with rich copper and lead mines; the well, which gives the town its name, is the most copious spring in Britain, giving out twenty-one tons of water per minute. **Flint** exports coal and lead, and imports timber.

Denbigh, a maritime county, between the Clwyd and the Conway. Silurian for the most part, but carboniferous and new red on the east border; surface rugged and mountainous; soil fertile in the valleys, but in the hilly districts consisting of peat covered by heath, and affording pasture to great numbers of sheep, goats, and black cattle. Principal minerals—coal, lead, iron, flint, and slates; manufactures—stockings, flannels, coarse woollen cloth, gloves, and shoes. **Denbigh**, on the Clwyd, with manufactories of tanning, shoemaking, and woollen plaids. **Wrexham**; paper-mills, flannel manufactories, coal and lead mines. **Llangollen**, with a noble aqueduct across the Dee for the Ellesmere Canal; it has fifteen arches, and is 126 feet high; a castle of great antiquity. **Abergele**, a resort for sea-bathing.

Caernarvon, a maritime county, between the Conway and the Irish Sea. Silurian; surface the most mountainous in South Britain, being traversed by the Snowdon range, 3590 feet high; but many tracts of low and fertile land, affording excellent pasturage. The chief branch of rural industry is dairy produce and the rearing of cattle and sheep. Its slate-quarries are the most valuable in Britain; other minerals are copper and lead. **Caernarvon**, on the Menai Strait, exports slate and copper ore; has an ancient castle erected by Edward I. to secure his conquest of Wales. **Bangor**, also on the Menai Strait, with two stupendous viaducts, each of which is a triumph of engineering skill. One of these is a huge suspension-bridge, 560 feet long, with the roadway 100 feet above high-water mark, erected by Telford; the other, the Britannia Tubular Bridge, Stevenson's greatest achievement, forming a part of the Chester and Holyhead Railway, consisting of two lines of iron tubes, each 1513 feet long, supported on three towers, and 100 feet above the sea-level. **Llanrwst** contains the tomb of Llewellyn, the last prince of Wales belonging to the Celtic race.

ANGLESEA, an insular county in the N.W. Chiefly Silurian, but Devonian and carboniferous in the centre, surface comparatively flat; climate mild, but unfavourable to the growth of timber; soil fertile and well cultivated; manufactures insignificant; minerals—copper, lead, and silver ores, coal, marble, and granite. Many Druidical remains. **Beaumaris,** a fine town on the Menai Strait, much frequented as a bathing-place. **Amlwch** exports copper obtained from the Parys and Mona mines. **Holyhead,** connected with Kingston and Dublin by a submarine telegraph 70 miles long.

MERIONETH, a maritime county between Caernarvon and the Dovey. Wholly Silurian; surface mountainous, well wooded, with fine vales and many small lakes; soil poor, and only fitted for pasture-lands; Welsh ponies, called "Merlins," are reared; minerals, slates and lime, with some lead and copper; manufactures, coarse flannels; considerable shipping. **Dolgelly,** on the Gwynion, near its junction with the Maw; it came into possession of the famous Owen Glendower, during his rebellion in 1400. **Bala,** on the lake of same name, the largest in North Wales, has some manufactures of flannels.

MONTGOMERY, an inland county in the basin of the Severn. Wholly Silurian; surface mountainous and well wooded, a small portion under tillage, the rest occupied with sheep-walks; the sheep are celebrated for their mutton and wool. Here also the famous "Merlins," a pure breed of Welsh ponies, are reared. The principal mineral is slate, and the chief article of manufacture is flannel. **Montgomery,** on the Severn, the scene of the last struggle between the Welsh and the English in 1294. **Welshpool,** considered the capital of North Wales, has tanneries and woolmills. **Newtown,** with manufactures of flannels. **Llanidloes,** where Llewellyn was defeated by Edward I.

CARDIGAN, a maritime county between the Dovey and Teify. Strata Silurian; surface level on the coast, where the ground is highly fertile; mountainous in the interior; scarcely one-third under cultivation; principal industry, rearing cattle; minerals—slates, silver, copper, and lead; manufactures, gloves and flannels. **Cardigan,** on the Teify, exports slates, oats, and butter. **Aberystwith,** a gay bathing-place; large export trade to Liverpool.

PEMBROKE, a peninsular county in the S.W. Silurian in the N., Devonian and carboniferous in the S.; mountainous in the Silurian tract, but tame elsewhere; coast bold and deeply indented; climate mild and very rainy; soil everywhere fertile, but chiefly used as pasture; minerals—anthracite, coal, lead, lime, slate, and marl; manufactures unimportant, but fisheries valuable. **Pembroke,** on Milford Haven, with a Government dockyard, and a castle stormed by Oliver Cromwell. **Haverfordwest** (Harfurdwest), on the Cleddy, has a great local trade. **Tenby,** on the south coast, a favourite watering-place; commodious and well-sheltered harbour.

CAERMARTHEN, the largest county in Wales, lying chiefly in the basin of the Towey. Silurian in N., Devonian and carboniferous in the S.; surface hilly, with numerous fertile valleys, and well wooded; the uplands afford pasture to herds of small cattle; minerals—iron, lead, coal, and lime; manufactures, tinned iron-plates and other articles. **Caermarthen,** on the Towey, one of the most flourishing towns in Wales; has a Presbyterian college, docks, and large export trade in lead, slates, bark, corn, and butter. **Llandeilo** has rich coal and iron mines, stanneries, and manufactures of flannel. **Llanelly,** with several docks and copper-works, and a large export trade in coal.

GLAMORGAN, the most important county in the principality, situated on the British Channel, between the rivers Burry and Rumney. Nearly all carboniferous; surface mountainous in the N., level elsewhere; soil highly fertile; minerals—inexhaustible quantities of coal and iron, both of which are wrought on an immense scale. The coal-field is the largest, and the iron-mines the most important, in the empire. **Cardiff**, at the confluence of the Taff and Severn, is rapidly becoming one of the first ports in the empire; splendid docks, with 45 acres water-area, give great facilities for shipments. **Swansea** is fast rising in importance: the copper ore of Anglesea, Cornwall, and Ireland is smelted and refined here. **Neath**, with iron and copper foundries and coal-mines. **Merthyr-Tydvil**, the largest town in Wales; though recently a small village, it has now a population of 50,000. This prosperity is owing to its position near the centre of the great coal-field of South Wales; numerous smelting-furnaces, iron-foundries, and coal and iron mines.

BRECKNOCK, an inland county in the basin of the Severn. Silurian in N. and W., all the rest Devonian; surface mountainous—the Beacon, which is the loftiest mountain in South Wales, rises to a height of 2862 feet; soil various, and only about a half cultivated, producing oats, barley, wheat; the remainder in pasture, yielding wool, butter, and cheese; minerals—copper, lead, iron, coal, and limestone, most of which are extensively wrought; manufactures, worsted hosiery and coarse woollen cloth. **Brecon**, on the Usk, has extensive markets and a considerable general trade: it is of high antiquity, and was the birthplace of Mrs Henry Siddons in 1755.

RADNOR, an inland county in the basin of the Severn. Wholly Silurian; surface mountainous, except in the S.E.; staple products, sheep of a small hardy breed, and cattle. Much of the surface is covered with bog and moorland, the ancient forests of Radnor having long since disappeared. **New Radnor**, once a fortified town, is now a mere village.

Capes.—Flamborough Head and Spurn Head, E. of Yorkshire; Gibraltar Point, E. of Lincoln; Lowestoft Ness, in Suffolk, the most eastern point in Great Britain; the Naze in Essex; N. Foreland, S. Foreland, and Dungeness, in Kent; Beachy Head and Selsea Bill in Sussex; Dunnore Head and the Needles in Isle of Wight; St Alban's Head and Portland Point in Dorset; Start Point in Devon; Lizard Point in Cornwall, the southernmost point of Great Britain; Land's End, the most westerly point of England; Hartland Point in N. of Devon; Worms Head in W. of Glamorgan; St Goven's Head and St David's Head in Pembroke; Brach-y-Pwll, the most western point of North Wales; Holyhead in Anglesea; St Bees Head in Cumberland.

Islands.—Holy I. or Lindisfarne, Ferne Is., and Coquet I., on the E. of Northumberland; Sheppey and Thanet in estuary of the Thames; Isle of Wight, S. of Hants; the Channel or Norman Isles—viz., Jersey, Guernsey, Alderney, and Sark—on the N.W. coast of France, capital, *St Helier*, the seat of the local Parliament, and the most southern town in the British Isles, pop. 30,000; Scilly Isles, 140 in number, off Land's End; Lundy Island, at the entrance of Bristol Channel; Stockham, Skomer, and Ramsey, W. of Pembroke; Bardsey, off Brach-y-Pwll Head; Anglesea and Holyhead, a county in N.W. of Wales; Isle of Man, a large and populous island in the middle of the Irish Sea.

Bays and Straits.—Humber Mouth, bet. York and Lincoln; the Wash, bet. Lincoln and Norfolk; Yarmouth Roads, E. of Norfolk; estuary of the Thames, bet. Essex and Kent; the Downs, bet. Kent and the Goodwin Sands; Strait of Dover, bet. Dover and Calais, 21 miles broad; Portsmouth Harbour, Spithead, Southampton Water, and the Solent, S. of Hants; Pool Bay and Weymouth Bay, S. of Dorset; Tor Bay, Start Bay, and Plymouth Sound, S. of Devon; St Austell Bay, Falmouth Harbour, and Mount's Bay, S. of Cornwall; St Ives Bay, W. of Cornwall; Bideford Bay, N. of Devon; Bristol Channel, bet. Somerset and Wales; Swansea Bay and Caermarthen Bay, S. of Wales; Milford Haven, St Bride's Bay, Cardigan Bay, and Caernarvon Bay, W. of Wales; Menai Strait, bet. Caernarvon and Anglesea; St George's Channel, bet. Wales and Ireland, 40 miles broad; estuaries of the Dee and Mersey, on either side of Cheshire; Lancaster Bay and Morecambe Bay, in the N.W. of Lancashire; Solway Firth, bet. Cumberland and Scotland.

Mountain System.—England is far from being a mountainous country. Strictly speaking, there is only one mountain-range of moderate elevation in the whole country. This range, commencing with the mountains on the Scottish border, pursues a southerly course through Derbyshire to Gloucestershire, and then deflects westward till it terminates at Land's End in Cornwall. The position of this lengthened and nearly continuous chain is a fine example of the well-known law that mountain-ranges follow the direction of the greatest length of land in which they are situated. This range is about 500 miles long, has few interruptions, and forms the main water-parting of England. Here nearly all the large rivers have their origin; and by this range, and the lateral branches which proceed from it on both sides, the direction of the rivers and the extent of the river-basins are determined. As it lies much nearer to the western than to the eastern side, the great majority of the rivers have an easterly direction. However, as there is a considerable gap about the middle of the range, and as two important rivers (the Trent and the Upper Avon) intersect it in opposite directions in that depression, it is more convenient to consider the two portions as separate and independent ranges. Then the mountains of Wales will rank as a third range; and the lateral ranges that branch off in an easterly direction, the fourth and last.

1. **The Northern Range,** extending from the extreme N. of England to the Peak of Derby in the centre of the kingdom, embraces three different chains—viz., the Cheviot Hills, the Pennine Chain, and the Cumbrian Mountains. The *Cheviot Hills* extend about 35 miles bet. Northumberland and Roxburgh shires, and form the water-parting bet. the basin of the Tweed on the one side, and those of the Aln, the Wansbeck, and the Tyne on the other—highest summit, Cheviot Peak, 2688 feet. The *Pennine Chain* is a continuation of the Cheviots, extending from their western extremity to the Peak of Derby, 270 miles; and forming the great water-parting of the North of England: it sends to the North Sea the Tyne, Wear, Tees, Yorkshire Ouse, and the left affluents of the Trent (Dove, Derwent, Idle, and Tarn); and to the Irish Sea, the Eden, Lune, Ribble, and Mersey. Principal summits, Cross Fell (2901), Bow Fell (2911), In-

gleborough (2361). The *Cumbrian Mountains*, in Cumberland, though an offshoot from the principal chain, contain the loftiest mountains in England proper. They are separated from the Pennine Chain by the Eden flowing northward, and by the Lune flowing southward—sending to the Irish Sea the Ehen, Esk, and Dudden, the Leven, Ken, and Lune, and containing the celebrated lakes which are the favourite resort of the English tourist. Principal eminences—Scawfell, 3229, the highest mountain in England; Helvellyn, 3055; Skiddaw, 3022.

2. The **Devonian Range** extends from the S.E. of Worcestershire, through Gloucester, Somerset, Devon, and Cornwall, and terminates at the Land's End in the extreme S.W. of the kingdom. It forms the principal water-parting of the south of England, separating the great basin of the Severn, with its continuation the Bristol Channel, from the rivers that flow to the E. and S.—viz., the right-hand affluents of the Trent, those flowing into the Wash, the Thames with its tributaries, and those which find their way to the English Channel. Its different parts receive particular names. Thus: The *Bredon Hills*, in the S.E. of Worcester, 900 feet; the *Cotswold Hills*, in Gloucester, 1134 feet; the *Mendip Hills*, in the N.E. of Somerset, 1000 feet; the *Quantock Hills*, in the N. of Somerset, 1428 feet; *Exmoor* and *Dartmoor*, in Devon, where the range attains its maximum elevation in Caws and Beacon, 1792 feet; the *Cornish Mountains*, in Cornwall, where Brown Willy rises to a height of 1364 feet.

3. The **Cambrian Range**, of very irregular form, occupies the greater part of the principality of Wales. Properly speaking, it forms an offshoot from the Pennine range, and the continuity of the water-parting bet. the two chains can be easily traced. It consists of two parallel ranges, one along the north coast of Wales, the other along the south, with a connecting-bar between their centres, running N. and S.—the whole forming a figure like an inverted capital I. The *northern range* contains the highest mountain in South Britain—viz., Snowdon in Caernarvon, 3590 feet, the culminating-point of England and Wales. The *central chain*, at right angles to it, contains Cader Idris, 2950, Plynlimmon, 2463, in Merioneth; and the *southern chain* has Brecknock Beacon, in Brecknockshire, 2862 feet, and the *Malvern Hills*, in Herefordshire, 1396 feet high. These last closely approach the Cotswold Hills in the Devonian range, on the opposite side of the Severn, a river which rises in Plynlimmon, and derives its head-waters and right-hand tributaries from the Cambrian range, which is therefore the connecting-link between the Pennine and Devonian ranges. In general this range forms the water-parting between the Severn and Bristol Channel on the one side, and the Irish Sea on the other. The Dee, Clwyd, and Conway flow to the N., the Dovey, Ystwith, and Teify to the W., all into the Irish Sea; the Towey, Tawy, and Taff, into the Bristol Channel; the Rumney, Usk, and Wye, into the Severn.

4. The **Lateral** or **Secondary Branches** are of no great elevation; but as they play an important part in the direction of the rivers, and determine the dimensions of the river-basins, they require special attention. Nearly all of them proceed in an easterly direction from the Devonian range. The first branches off from the Cotswold Hills in a north-eastern direction, separating Warwick and Leicester from Oxford, Northampton, and Rutland; it terminates in the N.W. of Lincoln, and divides the basin of the Humber and Trent from that of the Wash. The second diverges from the Devonian range at Salisbury Plain, in Wiltshire, and pursues a north-eastern course till it arrives at the N. coast of Norfolk: it bears different names in different parts, as the *Chiltern Hills* in Oxford and Bucks, the *Gogmagog Hills* in Cambridgeshire, and forms the water-

parting between the basins of the Wash and the Thames. The third consists of a double range of chalk-hills, called the *North* and *South Downs*, setting out from Salisbury Plain, and terminating, the one at Folkestone, and the other at Beachy Head. They enclose the district called "The Weald," and divide the Thames basin from the English Channel.

River-Basins.—There is a necessary connection between the mountain-chains, as above enumerated, and the more or less extended valleys or river-basins lying between them. As the principal mountain-range runs from N. to S., and is situated much nearer to the W. than to the E. coast, it follows that all the larger rivers have an easterly direction. The Severn, even, which is the only exception to this rule, pursues an easterly direction for a great part of its course; and were it not for the obstacle interposed by the Cotswold Hills, which deflect it westward, it would find its way to the Thames, and empty itself into the German Ocean.

Of the 100 river-basins of England and Wales, only 20 have any considerable magnitude. These occupy three-fourths of the entire surface, and contain 41 out of the 52 capitals. Only four of these basins are very extensive—viz., the Humber, the Wash, the Thames, and the Severn. Their combined area is reckoned at 30,000 sq. m., or more than half the entire surface, and they contain 28 capitals of counties. The first three slope towards the North Sea, and the fourth towards the Atlantic.

Of these four basins, that of the **Humber** and **Trent** is the largest, being one-sixth of the entire kingdom (area, 9550 sq. m.) It forms a quadrilateral figure, the longest side of which extends from the W. of Warwickshire, a little S. of the town of Birmingham, to the N. frontiers of Yorkshire; on the W. side, opposite Morecambe Bay, it approaches within 22 miles of the coast. It consists of three parts—viz., the basin of the Humber proper, 1178 sq. m.; of the Trent, 4082 sq. m.; and of the Yorkshire Ouse, 4290 sq. m. It is bounded on the N. by the basin of the Tees, on the W. by those of the Ribble and Mersey, on the S.W. by that of the Severn, and on the S.E. by the basin of the Wash. The **Basin of the Wash** is of an irregular form, consists of the subordinate basins of the Great Ouse, Nen, Welland, and Witham, and is bounded on the N. and N.W. by the Humber basin, on the W. by the Thames and Severn basins, on the S. and S.E. by the Thames and Yare basins: area, 5850 sq. m. The **Thames Basin** is bounded on the N. by those of the Wash and Blackwater; on the W. by the Severn basin, from which it is separated by the Cotswold Hills; and on the S. by the slope which inclines towards the English Channel: area 6160 sq. m. The **Severn Basin** commences at Plynlimmon, about 13 miles from the W. coast; is bounded on the N. by the basins of the Dee and Mersey; on the E. by those of the Humber and Thames; on the W. by the small streams that enter Cardigan Bay; and on the S.W. by those that flow into the Bristol Channel. As this Channel, however, is in reality only the estuary of this river, the real southern boundary is the Devonian range: area, 8580 sq. m.

Table of Rivers and Towns.—The following table, the result of much labour and research, presents in one connected view all the rivers and towns of England and Wales possessing the least degree of importance.

No fewer than 100 main rivers and 200 tributary streams are enumerated

in the left-hand column; while in the other will be found 800 towns, amounting to or exceeding 1000 inhabitants, including 350 large towns of 5000 inhabitants and upwards. The rivers are given in the order in which their mouths would occur to one sailing round the coast from the Solway Firth to the Tweed; and the towns and tributary rivers in the order in which he would observe them in his passage up the river. Main rivers, or those entering the sea, are placed to the extreme left, as the Sark, Eden, and Wampool; tributaries, or rivers of the second rank, one place further to the right, as the Caldew, Irthing, and Eamont; sub-affluents, or affluents of tributaries, two places to the right, as the Chor, Medlock, and Irk. The letter *l* denotes that the affluent after which it stands enters the main river on the *left;* those without any affix enter on the *right* side. Capitals of counties are distinguished by SMALL CAPITALS; towns of 5000 inhabitants and upwards, by Roman letters; and those between 1000 and 5000 by *Italics*. B. denotes *bay*; Co., *coast;* Hr., *harbour;* and Sd., *sound*.

Basins inclined to the Irish Sea.

Rivers.	*Towns.*
Sark,	*Gretna Green*, on the boundary.
Esk,	*Longtown*, *Langholm*.
Liddel, *l*	*New Castleton*.
Eden,	CARLISLE, APPLEBY, Kirkby-Stephen.
Caldew, *l*	Carlisle.
Irthing,	*Brampton*.
Eamont, *l*	Penrith.
Wampool,	*Wigton*.
Poebeck,	Whitehaven.
Ellen,	Maryport.
Derwent,	Workington, Cockermouth, *Keswick*.
Ehen,	*Egremont*.
Morecambe Bay,	Ulverstone, *Dalton*, n., Cartmell, n.
Leven and L. Windermere,	Hawkshead, n.
Ken or Kent,	Kendal.
Lune,	LANCASTER, Kirkby-Lonsdale, *Sedbergh*.
Dent, *l*	*Dent*.
Wyre,	*Fleetwood*.
Ribble,	*Kirkham*, Preston, Clitheroe, *Settle*.
Douglas, *l*	Wigan, Leigh.
Chor,	Chorley.
Darwen, *l*	Blackburn, n., Over-Darwen, n., Accrington, n.
W. Calder, *l*	Burnley, Colne, Padiham, n.
Alt,	Ormskirk, Prescot.
Mersey and Tame,	Liverpool, Birkenhead, *Much Wolton*, n., Runcorn, Warrington, *Newton-in-Makerfield*, n., Stockport, Hyde, Ashton-under-Lyne, Staley Bridge.
Weaver, *l*	Frodsham, Crewe, n., Nantwich.
Dane,	*Middlewich*, Congleton.
Sankey,	Warrington, *Newton*, n., St Helens.
Bollin, *l*	Altringham, *Bollington*. n., Macclesfield.
Irwell,	Manchester, Salford, Bury, Haslingden, *Heywood*, n., *Droyleden*, n.
Medlock, *l*	Oldham.
Irk, *l*	Middleton.
Crole,	Bolton, Tarnwarth, n., Hindley, n.
Roche, *l*	Rochdale, Todmorden, n., Bacup, n.
Goyt, *l*	Stockport.
Etherow,	Glossop, n.
Dee,	Holywell, Flint, *Hawarden*, n., *Neston*, CHESTER, Wrexham, n., *Malpas*, n., Llangollen, *Corwen*, *Bala*.
Allen, *l*	MOLD.
Clwyd,	Rhyl, *Rhyddlan*, *St Asaph*, DENBIGH, *Ruthin*.
N. Co. Denbigh,	*Abergele*.
Conway,	*Conway*, *Llanrwst*.
Menai Straits,	BEAUMARIS, Bangor, CAERNARVON.
Co. of Anglesea	Amlwch, Holyhead.
Co. of Caernar-von,	*Nevin*, Pwllheli, Llandndno.
Maw,	*Barmouth*, DOLGELLY, n.
Gwynion, *l*	Dolgelly.
Dovey,	*Machynlleth*.
Ystwith,	Aberystwith.
Teify,	CARDIGAN, *Lampeter*, *Tregaron*.
Co. Pembroke,	*Newport*, *Fishguard*, Tenby.
Milford Haven,	Milford, PEMBROKE, Haverfordwest, *Narberth*.

Basins inclined to the Bristol Channel.

Rivers.	*Towns.*
Taff, ...	*Laugharne.*
Towey, ...	CAERMARTHEN, Llandello, *Llangadock, Llandovery.*
Caermarthen Bay,	*Kidwelly*, Llanelly.
Tawy, ...	Swansea.
Neath, ...	Neath.
Afon, ...	*Aberavon.*
Ogmore, ...	*Bridgend.*
Severn, ...	CARDIFF, *Chepstow*, n., *Berkeley*, n., *Lydney*, GLOUCESTER, Tewkesbury, *Upton*, Malvern, Stourport, *Bewdley*, Bridgenorth, *Broseley*, Much-Wenlock, n., Madeley, n. SHREWSBURY, Welshpool, MONTGOMERY, Llanidloes.
Axe, ...	*Axbridge*, Wells.
Taff, ...	CARDIFF, Merthyr-Tydvil.
Ely, ...	*Llantrissent.*
Usk, ...	Newport, *Abergavenny*, BRECON.
Ebwy, ..	Tredegar, n.
Afon-Llwyd,	*Pontypool.*
Lower Avon, *l*	Bristol, Keynsham, Bath, *Bradford*, Trowbridge, *Melksham*, Chippenham, Malmesbury.
Lr. Frome,	Bristol, Chipping-Sodbury.
Frome, *l*..	Frome, *Bruton*, n.
Were, *l* ..	Westbury.
Marden, *l*	*Calne.*
Wye, ...	*Chepstow, Coleford*, MONMOUTH, Ross, HEREFORD, *Hay, Builth*, Rhayader.
Lugg, *l* ..	Leominster, Presteign, NEW RADNOR, n.
Frome, *l*	Bromyard.
Arrow,	Leominster, Kington.
Somergill,	NEW RADNOR.
Berkeley Avon,	*Berkeley, Wotton-under-Edge.*
Frome, *l* ..	Stroud.
Stroud ...	*Minchin-Hampton.*

Rivers.	*Towns.*
Leddon, ...	GLOUCESTER, Newent, *Ledbury.*
Chelt, *l*	Cheltenham.
Upper Avon,	Tewkesbury, *Pershore*, Evesham, *Stratford*, WARWICK, Rugby.
Arrow, ..	*Alcester*, Redditch.
Alne, *l*	Henley-in-Arden.
Leam, ...	WARWICK, Leamington.
Sow, ...	Coventry, n., *Bedworth.*
Swift, ...	Rugby, *Lutterworth.*
Teme, ...	WORCESTER, n., *Tenbury*, Ludlow, *Knighton.*
Salwarp, *l* ..	*Droitwich*, Bromsgrove.
Stour, *l*	Stourport, Kidderminster, Stourbridge, *Halesowen*, Dudley, n.
Smestow,	Wolverhampton, Bilston, n.
Warf, *l*	Bridgenorth, *Shifnal*, Dawley.
Tern, ...	Wellington, n., *Market-Drayton.*
Roden, ..	*Wem, Whitchurch*, n., *Ellesmere*, n.
Mees, *l* ..	*Newport.*
Perry, *l*	Oswestry.
Vyrnwy, *l* ..	*Llanfair.*
Cain, *l* ..	*Llanfyllin.*
Brue, ...	*Glastonbury, Shepton-Mallet, Castlecarey, Brunton.*
Parret, ...	Bridgewater, *Langport, S. Petherton, Crewkerne, Beaminster.*
Carey, ...	*Somerton.*
Tone, *l*	TAUNTON, *Milverton*, n., *Wellington.*
Yore or Ivel,	*Langport*, Yeovil, Sherborne.
Isle, *l*	*Ilminster, Chard.*
Bristol Channel,	*Dunster, Ilfracombe, Hartland.*
Taw, ...	Barnstaple, *Chumleigh.*
Mole, ...	S. Molton.
Torridge, ...	Bideford, *Torrington.*
Bude, ...	*Stratton.*
Camel, ...	*Padstow*, BODMIN.
W. Co. Cornwall,	Camborne, n., St Agnes, St Ives, *St Just.*

Basins inclined to the English Channel.

Mount's Bay, ..	Penzance, *Marazion, Helstone*, n.
Falmouth Hr.	Falmouth, *Penryn*, Truro, Redruth, n.
S. Co. Cornwall	*St Austell.*
Fowey, ...	*Fowey, Lostwithiel.*
Looe, ...	*East Looe, Liskeard.*
Plymouth Sd. .	Plymouth, Devonport, *St Germans, Saltash.*
Lynher, ...	*St Germans, Callington.*
Tavy, ...	Tavistock.
Tamar, ...	*Saltash, Launceston, Holsworthy*, n.

Basins inclined to the English Channel (continued).

Rivers.	*Towns.*
Dart,	Dartmouth, *Totness*, *Ashburton*.
Tor Bay,	*Brixham*, Torquay.
Teign,	Teignmouth, *Newton-Abbot*, *Chudleigh*, *Moreton-Hampstead*.
Exe,	Exmouth, *Topsham*, EXETER, Tiverton, *Dulverton*.
Crede,	*Crediton*.
Otter,	*St Mary*, *Ottery*, *Honiton*.
Sid,	*Sidmouth*.
Axe,	*Colyton*, *Axminster*.
Lyme,	Lyme-Regis.
Bride or Brit,	Bridport, *Beaminster*.
Wey,	Weymouth.
Poole Harbour and Frome,	Poole, *Corfe Castle*, n., Wareham, DORCHESTER
Hampshire Avon,	Christchurch, *Ringwood*, Fordingbridge, SALISBURY, *Amesbury*, Devizes.
Stour,	Christchurch, *Wimborne*, *Blandford*, *Sturminster*, *Shaftesbury*.
Allen, *l*	*Cranbourne*.
Cayle, *l*	*Stalbridge*, *Wincanton*.
Willy,	SALISBURY, *Wilton*, *Warminster*.
The Solent,	Lymington.
Southampton water,	Southampton.
Aire, *l*	*Titchfield*.
Hamble, *l*	*Bishop's Waltham*.
Itchin, *l*	Southampton, WINCHESTER, Alresford.
Test,	*Romsey*, Andover, n., *Whitchurch*.
Portsmouth H.	Portsmouth, *Fareham*.
Chichester Hr. & R. Lavant,	*Havant*, Chichester.
Sussex Co.,	*Bognor*, Worthing, Brighton, Eastbourne, Hastings.
Arun,	*Little Hampton*, *Arundel*.
W. Rother,	*Petworth*, Midhurst, *Petersfield*.
Adur,	*New Shoreham*, Horsham
Ouse,	*Newhaven*, LEWES, *Cuckfield*, n.
Rother,	*Rye*, *Battle*, n.
Crane, *l*	*Tenterden*, n., *Cranbrook*.
S. Co. Kent,	Hythe, Folkestone.
E. Co. Kent,	Dover, Deal.

Basins inclined to the North Sea.

Stour,	Ramsgate, *Sandwich*, Canterbury, Ashford.
N. Co. Kent,	Margate, *Herne Bay*, *Whitstable*, Faversham, *Milton*, n.
Thames,	Sheerness, Gravesend, Woolwich, Greenwich, Blackwall, Deptford, LONDON, Fulham, BRENTFORD, Richmond Twickenham, Kingston, Hampton, *Chertsey*, *Staines*, *Eton*, Windsor, *Maidenhead*, *High Wycombe*, Great Marlow, Henley, READING, n., *Wallingford*, Abingdon, OXFORD, *Bampton* n., *Gt. Farringdon*, Circencester, n.
Medway,	Sheerness, Chatham, *Strood*, ROCHESTER, MAIDSTONE. Tunbridge, Tunbridge Wells, n., East Grinstead, n.
Darent,	Dartford, *Seven Oaks*, *Westerham*.
Pym, or Bourne, *l*	*Romford*.
Roding, *l*	Barking, *Epping*, n.
Lea, *l*	Blackwall, Tottenham, n., Enfield, n., *Waltham Abbey*, Ware, HERTFORD, Luton.
Stort, *l*	Bishop's Stortford.
Ravensbourne,	Deptford, Bromley.
Wandle,	*Wandsworth*, Croydon.
Brent,	*Brentford*.
Hogsmill,	Kingston, *Epsom*.
Mole,	*Leatherhead*, *Dorking*, Reigate.
Wey,	GUILDFORD, *Godalming*, *Farnham*, *Alton*.
Bourne,	*Chertsey*, *Chobham*.
Colne, *l*	*Staines*, *Uxbridge*, *Watford*, St Albans.
Misbourne,	*Amersham*.
Chess,	Chesham.
Verlan,	St Albans, *Hemel-Hempstead*, n., *Berkhamstead*, n.
Wick, *l*	Great Marlow, *High Wycombe*.
Loddon,	*Henley*, n., *Hurst*, Basingstoke, *Kingsclere*, n.
Kennet,	READING, Newbury, *Hungerford*, *Marlborough*.
Lambourne, *l*	Newbury, *Lambourn*.

Basins inclined to the North Sea (continued).

Rivers.	*Towns.*
Thame,	*Thame*, Aylesbury, *Tring*, n., *Ivinghoe*, n.
Ock,	Abingdon, *Wantage*, n., Highworth, *Swindon*.
Cherwell, *l.*	Oxford, Banbury.
Ray, *l.*	Bicester
Evenlode, *l.*	*Charlbury*.
Glynn, *l.*	Woodstock.
Windrush, *l*	*Witney*.
Churn, *l.*	Cirencester.
Blackwater,	Maldon, *Witham*, *Coggeshall*, Saffron - Walden, n.
Chelmer,	Chelmsford, *Dunmow*, *Thaxted*.
Cann,	Chelmsford, *Brentwood*, n.
Podsbrook	*Witham*, Braintree.
Colne,	Colchester, Halstead.
Stour,	Harwich, Sudbury, *Long Melford*, *Haverhill*.
Bret, *l.*	*Hadleigh*.
Orwell,	Ipswich, Stow-Market.
Deben,	*Woodbridge*.
Alde,	*Orford*, *Framlingham*.
Blyth,	*Southwold*, *Halesworth*.
Suffolk Co,	Lowestoft.
Yare,	Yarmouth, Norwich, Windham, n.
Bure, *l.*	Aylsham.
Ant, *l.*	North Walsham.
Waveney,	Beccles, *Bungay*, *Harleston*, Eye, n., *Diss*.
Taes,	Norwich, *Attleborough*, n.
N. Co. Norfolk,	*Cromer*, *Wells*.
Cley,	*Holt*.
Great Ouse,	Lynn-Regis, *Downham-Market*, Ely, *St Ives*, Huntingdon, *Godmanchester*, n., *St Neots*, Bedford, *Olney*, *Newport - Pagnel*, *Stony-Stratford*, Buckingham, *Brackley*.
Nar, or Setchy,	Lynn-Regis, *Swaffham*, n.
Stoke,	*Downham - Market*, n., *Watton*.
Lit. Ouse,	Brandon, *Thetford*.
Larke,	*Mildenhall*, Bury St Edmund's.
Cam,	*Newmarket*, n., Cambridge, Saffron - Walden.
Ivel,	*Potton*, n., *Biggleswade*.
Hiz	Hitchin.
Ouzel,	*Leighton-Buzzard*, *Dunstable*, n.
Tow,	*Towcester*.
Nene,	*March*, *Ramsey*, Wisbeach, *Whittlesea*,

Rivers.	*Towns.*
Nene— *continued.*	*Crowland*, Peterborough, *Oundle*, Wellingborough, Northampton, *Daventry*, *Naseby*, n.
Ise,	Kettering, *Rothwell*.
Welland,	*Holbeach*, n., Spalding, *Crowland*, Stamford, *Uppingham*, n. *Market-Harborough*.
Glen,	*Bourne*.
Witham,	Boston, Lincoln, *Grantham*.
Sleaford,	*Sleaford*.
Bain, *l.*	*Horncastle*.
Langworth, *l*	*Market-Rasen*.
Steeping,	*Wainfleet*, *Spilsby*.
Withern,	*Alford*, n.
Humber and Trent,	Great Grimsby, Hull or Kingston, *Barton*, *North and South Cave*, *Epworth*, Gainsborough, Newark, *Southwell*, n., *Bingham*, n., Nottingham, Burton, *Rugeley*, *Stone*, Longton or Lane End, Newcastle - under - Lyne, Stoke-upon-Trent, Hanley, Shelton, Burslem.
Ludd,	Louth.
Hull, *l.*	Kingston or Hull, Beverley, *Great Driffield*, *Kilham*.
Ancholm,	Glanford Brigg, *Caistor*, n.
Ouse & Ure,	Goole, *Howden*, Selby, York, all on the Ouse: *Aldborough*, *Boroughbridge*, Ripon, *Masham*, *Hawes*.
Don,	*Thorne*, Doncaster, Rotherham, Sheffield, *Pennistone*.
Dearne,	Barnsley.
Rother,	Rotherham, *Dronfield*, n., Chesterfield.
Aire,	*Howden*, n., *Snaith*, Pontefract, n., Leeds, Bradford, n., *Bingley*, Keighley, *Skipton*.
Calder,	*Castleford*, Wakefield, *Batley*, n., Dewsbury, Huddersfield, n. Halifax, Todmorden.
Derwent, *l*	*Pocklington*, n., New-Malton, *Pickering*, n.
Rye,	*Helmsley*, *K. Moorside*, n.
Wharfe,	*Tadcaster*, *Wetherby*, *Guiseley*, n., *Yeadon*, *Otley*.
Foss, *l.*	York, *Easingwold*, n.

Basins inclined to the North Sea (continued).

Rivers.	*Towns.*
Nidd,	Knaresborough, *Harrogate.*
Swale, *l*	*Bedale*, n., *Richmond*, *Reeth.*
Cod-beck, *l*	Thirsk.
Wiske, *l*	*Northallerton.*
Old Don, *l*	*Crowle*, *Tickhill.*
Idle, *l*	*E. Retford*, Mansfield.
Ryton, *l*	Worksop.
Devon,	Newark, *Bingham.*
Erwash, *l*	*Ilkeston*, *Alfreton*, *Kirkby-in-Ashfield.*
Soar,	Loughboro', LEICESTER, Hinckley.
Wreak,	*Melton-Mowbray*, OAKHAM.
Derwent, *l*	DERBY, Belper. *Matlock.*
Wye,	*Bakewell*, *Tideswell*, *Buxton.*
Dove, *l*	*Tutbury*, Uttoxeter, Ashbourne, *Hartington.*
Churnet,	*Cheadle*, Leek.
Schoo, *l*	*Ashbourne*, *Wirksworth.*
Mease,	*Ashby-de-la-Zouch.*
Tame,	Lichfield, n., *Tamworth*, Wednesbury, n., West Bromwich, n., Walsall.
Anker,	*Atherstone*, Nuneaton.
Blithe,	*Coleshill*, *Solihull.*
Rea,	Birmingham.
Sow,	STAFFORD, Eccleshall.
Penk,	*Penkridge*, *Cannock*, *Brewood.*
Yorkshire Co.,	Bridlington, Scarborough.
Esk,	Whitby.
Tees,	Middlesborough, *Guisborough*, n., Stockton, *Barnard Castle.*
Leaven,	*Stokesley.*
Skerne, *l*	Darlington.
Durham Co.,	Hartlepool.
Wear,	Sunderland, *Houghton-le-Spring*, n., DURHAM, Bishop-Auckland, *Welsingham.*
Tyne,	Tynemouth, S. Shields, N. Shields, NEWCASTLE, Gateshead, *Hexham*, *Haltwhistle*, *Aldstone.*
North Tyne, *l*	*Bellingham.*
Allen,	*Allendale.*
Blyth,	*Blyth.*
Wansbeck,	Morpeth.
Coquet,	*Rothbury.*
Aln,	Alnwick.
Co. of Northumberland,	*Belford*, n.
Tweed,	Berwick.
Till,	*Wooler.*

Lakes.—The English lakes are few in number, very small in dimensions, and mostly confined to the Cumbrian group of mountains. Windermere, the largest of them, is 10½ miles long, and is drained by the Leven. Ulleswater, in the same county, is the second largest; whilst Bala, the largest in Wales, is 4 miles long, and is drained by the Dee. They are, however, celebrated for their beauty, for being the resort of tourists, and for containing a species of fresh-water fish called the char, peculiar to the north-west corner of England, and considered a high luxury of diet. The other principal lakes are *Bassenthwaite*, *Derwentwater*, *Thirlemere*, *Crummockwater*, *Loweswater*, *Ennerdale Water*, and *Wastwater*, in Cumberland; *Haweswater*, *Grassmere*, and *Rydal*, in Westmoreland; and *Coniston Water*, in Lancashire.

Internal Communication.—England stands unrivalled among the nations for the number and extent of its railways, canals, navigable rivers, and turnpike roads. In January 1871 there were 58 main lines of railway in operation, with a vast number of branches, affording 10,773 miles open for traffic, and the total cost of construction amounts to about £365,000,000. The whole kingdom, indeed, with the exception of central Wales and a small portion of the S.W. of England, is one huge network of railways. The Surrey iron railway, between Wandsworth on the Thames and Croydon in Surrey, was the first railway in England intended for public use, and was opened in 1805; but the Stockton and Darlington railway, opened in 1825, was the first to employ locomotive engines, and to excite the general

interest of the public. England is further intersected in every direction by canals, navigable rivers, and rivers rendered navigable by artificial means. The last mentioned are called *navigations*. The oldest canal is the *Sankey Brook Canal* in Lancashire, finished in 1768; and the total length of all the canals is estimated at about 2100 miles, besides 2000 miles of rivers rendered navigable by artificial means. England is also traversed by 25,000 miles of *Turnpike Roads*, and by about 100,000 miles of cross-roads, by means of which, and by the numerous canals and railways, commodities of all kinds are so easily and expeditiously conveyed to all parts of the kingdom, that they everywhere fetch about the same prices.

National Character.—The most striking characteristics of an Englishman are his love of liberty, justice, and independence, his high sense of honour and fair-dealing. To think, speak, and write as he pleases on all subjects—so long as he keeps within the bounds of truth and charity—he claims as his inalienable right; and to maintain this liberty he evinces indomitable courage, perseverance, and self-denial. To a stranger he appears cold, reserved, blunt, and haughty; but his candour, probity, and veracity secure him the respect of all. His humanity and philanthropy are of a highly practical character, as is evinced by the extraordinary number of charitable, benevolent, and religious institutions with which his country abounds. He is unrivalled for good taste in domestic architecture, and his home is always a model of cleanliness, neatness, and comfort; while his frugality, economy, and providence are evinced by his vigorous support of savings-banks, friendly societies, and insurance offices.

Literature.—There is perhaps no nation, ancient or modern, that excels England in the number of distinguished literary names. The following is a list of some of her most eminent and gifted sons in the various departments of science and literature: POETRY—Chaucer, Spenser, Shakespeare, Milton, Herbert, S. Butler, Waller, Prior, Dryden, Pope, Young, Cowper, Crabbe, Byron, Rogers, Coleridge, Southey, Wordsworth, Tennyson. HISTORY—Clarendon, Gibbon, Coxe, Roscoe, Napier, Lingard, Thirlwall, Hallam, Grote, Macaulay, Dr W. Smith, Philip Smith. SCIENCE AND PHILOSOPHY—Bacon, Boyle, Newton, Ray, Locke, Hobbes, Cudworth, Tucker, Malthus, Bentham, Davy, C. Hatton, Faraday, George and Robert Stevenson, Whewell, Sedgwick, Professor Owen. THEOLOGY—Bede, Wycliffe, Hooker, Jeremy Taylor, Chillingworth, Bishop Hall, Barrow, Walton, Patrick, Bishop Lowth, Owen, Howe, Baxter, Bunyan, Poole, Doddridge, Henry, Lardner, Butler, Samuel Clarke, Paley, Scott, R. Hall, Foster, Whately, I. Taylor, Dean Alford. MEDICINE—Harvey, Jenner, Heberden, Gooch, Hall, Willan, Bateman, Cooper. TRAVELS—Drake, Frobisher, Dampier, Anson, Byron, Cook, Denham, R. and J. Lander, Parry, Franklin, Speke, and Burton. FINE ARTS—Wren, Hogarth, Reynolds, Chantrey, Hayman, Gainsborough, Wilson, Opie, Romney, Wright, Northcote, Morland, Lawrence, Haydon, Turner, Landseer, Purcell. MISCELLANEOUS—Addison, Johnson, Bentley, Sydney Smith, De Foe, Fielding, Warren, Thackeray, Dickens, Sir H. Rawlinson.

SCOTLAND.

Position and Boundaries.—Scotland forms the north part of Great Britain; the mainland extends from lat. 54° 38′ to 58° 40′ north, and from lon. 1° 46′ to 6° 14′ west; thus occupying 4° 1′ of lat. and 4° 28′ of lon. It is bounded on the N. by the Pentland Firth, on the E. by the North Sea, on the S. by England, and on the W. by the Atlantic.

Form, Coast-Line, and Extreme Points.—Of an oblong but extremely irregular form, with numerous deep indentations, especially on the west. The extreme points are, the Mull of Galloway in the S., Dunnet Head in the N., Buchanness in the E., and the Point of Ardnamurchan in the W. Including the islands, the most northerly point is Unst, in lat. 60° 49′; and the most westerly, St Kilda, in lon. 8° 34′ west. The coast-line is so extremely irregular as to suggest the idea that the country is about to separate into fragments: length, including the main inlets of the ocean, 2500 miles, or 1 mile of seabord for every 11 square miles of surface. This ratio is unparalleled in any other European country except Greece.

Area and Population.—Including the islands, the area is 30,685 sq. m., or 19,639,377 acres, being considerably more than one-third of the area of Great Britain with the circumjacent 186 isles. Extreme length of mainland 276 miles, with a breadth varying from 30 to 175 miles; but from the Mull of Galloway to the extreme north of Shetland about 450 miles, and from Peterhead to St Kilda about 250 miles. In 1871 the population was 3,360,018, being nearly 107 persons for every sq. m.; while England has 389 persons to the sq. mile, and Ireland 166. In 1801 the population was only 1,608,420; it has therefore fully doubled itself in the last seventy years. The population is about equally divided between town and country, there being 225 cities and towns with an average population of 6654. The counties containing the largest population are, Lanark, with 765,339; Mid-Lothian, 328,000; Aberdeen, 245,000; while Kinross has only 7198, and Nairn 10,225. The most densely peopled counties are, Edinburgh, which has 894 persons to every sq. m., Lanark 861, and Renfrew 854; whereas Sutherland has only 13 persons to the square mile, Inverness 21, and Argyll 23.

Political Divisions.—Scotland is politically divided into 33 counties, 13 of which are southern, 10 central, and 10 northern. The central counties are separated from the southern by the Firths of Forth and Clyde and the Grand Canal connecting them; and from the northern by the Grampian chain.

Thirteen Southern Counties.

Edinburgh or Mid-Lothian.—Edinburgh 198 n., Leith 44, Portobello 5, Musselburgh 8 (F. of Forth), Dalkeith 6 (Esk).

Between 1000 *and* 2500 *inhabitants.*—Penicuik, Newhaven, Loanhead.

Haddington or E. Lothian.—HADDINGTON 4 (Tyne), Dunbar 3 (F. of Forth).

North Berwick, Tranent, Prestonpans.

Berwick.—GREENLAW 1 (Blackadder), Dunse 3 (Whiteadder).

Coldstream, Eyemouth, Earlston, Lauder.

Roxburgh.—JEDBURGH 3 (Jed), Hawick. 11 (Teviot), Kelso 5 (Tweed).

Melrose, New Castleton, Wilton.

Dumfries.—DUMFRIES 15 (Nith), Annan 3 (Annan).

Thornhill, Lockerby, Lochmaben, Langholm, Moffat.

Kirkcudbright.—KIRKCUDBRIGHT 2 (Dee), Maxwelltown 4 (Nith).

Castle Douglas, Creetown, Gatehouse, Dalbeattie.

Wigtown.—WIGTOWN 2 (Wigtown Bay), Newton Stewart 3 (Cree), Stranraer 6 (L. Ryan).

Whithorn, Glenluce, Port Patrick.

Ayr.—AYR 18 (Ayr), Saltcoats 5, Ardrossan 4, Largs 3 (F. of Clyde), Irvine 7, Kilmarnock 24, Galston 5, New Mills 3 (Irvine), Kilwinning 4, Dalry 5, Kilbirnie 3 (Garnock), Stewarton 3 (Annock), Girvan 5, Maybole 4 (Girvan), Beith 4 (Black Cart).

Muirkirk, West Kilbride, Waterside, Mauchline, Troon, Dalmellington, Catrine, Cumnock, Auchinleck, Crosshill, Darvel, Eglinton, Hurlford, Kilmaurs, Peesweep, Tarbolton, Stevenston.

Renfrew.—RENFREW 4, Port-Glasgow 11, Greenock 58 (F. of Clyde), Paisley 48, Pollockshaws 9 (White Cart), Johnston 8, Kilbarchan 3 (Black Cart), Barrhead 6 (Levern).

Gourock, Busby, Linwood, Lochwinnoch, Neilston, Eaglesham, Thornliebank, Bridge of Weir, Nitshill.

Lanark.—LANARK 5, Glasgow 548, Rutherglen 9, Hamilton 11, Carluke 3 n., Motherwell 7 n. (Clyde), Airdrie 17, Coatbridge, 16 (N. Calder), Wishaw 9 (S. Calder), Strathaven 4 (Avon).

Calder, Calderbank, Bellshill, Baillieston, Shettleston, Tollcross, Springburn, Kirkfield Bank, Chapelhall, New Lanark, Rosehall, Uddingston, Blantyre, Shotts, Lesmahago, Douglas, E. Kilbride, Biggar, Bothwell, Carfin, Holytown, Newarthill, Cambusnethan, Coltness.

Linlithgow or W. Lothian.—LINLITHGOW 4, Bathgate 5 (Avon), Bo'ness 4 (F. of Forth).

South Queensferry, Whitburn, Crofthead, Armadale, Broxburn.

Peebles.—PEEBLES 3 (Tweed), Innerleithen 2 (Leithen).

Selkirk.—SELKIRK 5 (Ettrick), Galashiels 10 (Gala Water).

TEN CENTRAL COUNTIES.

Fife.—CUPAR 5, St Andrews 6 (Eden), Kirkcaldy 12, Burtisland 3 (F. of Forth), Dunfermline 15 (Lyne), Leven 3 (Leven).

Falkland, Auchtermuchty, Lochgelly, Markinch, Oakley Prinlaws, St Monance, Anstruther, Pittenweem, Buckhaven, Wemyss, Kinghorn, Inverkeithing, Dysart, Ferry-Port-on-Craig, Newburgh, Cowdenbeath, Crossgates, Leslie.

Kinross.—KINROSS 2, Milnathort 2 (Leven).

Clackmannan.—CLACKMANNAN 1 (Black Devon), Alloa 9, Tillicoultry 4, Dollar 2 (Devon).

Stirling.—STIRLING 14 (Forth), Grangemouth 3, Falkirk 12, Denny 4 (Carron), Kilsyth 5, Alva 4 (Devon), Bridge of Allan 3 (Allan).

Bannockburn, Stenhousemuir, Carron, Dunipace, Lauriston, Milngavie Camelon, Balfron.

Dumbarton.—DUMBARTON 11, Helensburgh 6 (Clyde), Renton 3, Alexandria 5, Bonhill 3 (Leven), Kirkintilloch 6 (Kelvin).

Cumbernauld, Duntocher, Jamestown.

Bute.—ROTHESAY 8 (E. coast of Bute).

Lamlash and Brodick (in Arran), Millport (in Cumbrae).

Argyll.—INVERARY 1 (L. Fyne), Campbelton 7 (Kilbrannan Sd.), Dunoon 4 (Clyde).

Tarbert, Lochgilphead, Tobermory, Oban, Bowmore, Port Ellen.

Perth.—PERTH 26 (Tay), Crieff 4 (Earn), Auchterarder 3 (Ruthven), Blairgowrie 5 (Ericht), Kincardine 2 (F. of Forth).

New Scone, Dunkeld, Stanley, Coupar-Angus, Aberfeldy, Errol, Abernethy, Muthill, Comrie, Dunning, Methven, Alyth, Blair Atholl, Dunblane, Doune, Callander, Blackford, Rattray.

Forfar.—FORFAR 11 (Dean), Kirriemuir 3 (Gairie), Broughty Ferry 6, Dundee 119 (F. of Tay), Arbroath 20 (coast), Montrose 15, Brechin 8 (S. Esk).

Carnoustie, Ferryden, Letham, Friockheim, Southmuir.

Kincardine.—STONEHAVEN 3 (coast).

Luthermuir, Laurencekirk, Bervie, Johnshaven, Banchory.

TEN NORTHERN COUNTIES.

Aberdeen.—ABERDEEN 88 (Dee), Woodside 4, Inverury 3 (Don), Huntly 4 (Deveron), Peterhead 9, Fraserburgh 3 (coast).

Kintore, Old Meldrum, Ellon, Strichen, Turiff, Pitsligo, Rosehearty, *Balmoral.*

Banff.—BANFF 4, Macduff 3 (Deveron), Cullen 2, Buckie 4 (coast), Keith 4 (Isla).

Portsoy, Aberchirder, Dufftown.

Moray or **Elgin.**—ELGIN 7 (Lossie), Forres 4, (Findhorn).

Lossiemouth, Fochabers, Rothes, Burghead, Hopeman.

Nairn.—NAIRN 4 (Nairn).

Inverness.—Inverness 14 (Ness).

Fort George, Fort William, Beauly, Grantown, Kingussie, Portree (I. of Skye).

Ross.—Dingwall 2 (Cromarty F.), Tain 2 (Dornoch F.)

Fortrose, Invergordon, Alness, Evanton, Plockton, Maryburgh, Avoch, Stornoway (in Lewis).

Cromarty.—CROMARTY 1 (Cromarty F.), Ullapool 1 (Lochbroom).

Sutherland.—DORNOCH 1 (Dornoch Firth).

Golspie, Helmsdale.

Caithness.—WICK 8 (E. coast), Thurso 4 (Pentland F.)

Lybster, Castletown.

Orkney and Shetland.—KIRKWALL 3, Stromness 2 (Orkney), Lerwick 4 (Shetland).

Descriptive Notes. — At the last census there were only three towns in Scotland with more than 100,000 inhabitants (Glasgow, Edinburgh, and Dundee); two bet. 100,000 and 50,000 (Aberdeen and Greenock); four bet. 50,000 and 20,000 (Paisley, Leith, Perth, and Kilmarnock), thirteen bet. 20,000 and 10,000 (Ayr, Arbroath, Montrose, Airdrie, Dumfries, Stirling, Hamilton, Dunfermline, Inverness, Kirkcaldy, Dumbarton, Forfar, and Galashiels); and twenty-seven bet. 10,000 and 5000—being in all forty-nine towns of upwards of 5000 inhabitants.

THE THIRTEEN SOUTHERN COUNTIES.

EDINBURGH lies in the basin of the Forth, and on the south side of the firth or estuary of that name.—Nearly all Coal-measures, but trap in the Pentland Hills, and Lower Silurian in the S.E.; Surface hilly, having the Moorfoot Hills in the S.E., the Pentland Hills in the centre, and the Corstorphine Hills, including Arthur's Seat, near Edinburgh, in the N.; soil very fertile, and highly cultivated in the level parts; extensive nurseries and vegetable gardens near the capital. Minerals highly valuable, especially coal and ironstone, which are extensively wrought, and sandstone (at Craigleith) of a very superior quality; one vast bed of coal, between Carlops and Musselburgh, is 15 miles long by 8 broad, and contains 33 seams. Manufactures less important, but extensive paper-mills on the Esk and Water of Leith, as also several breweries, distilleries, and potteries. **Edinburgh**, near the Firth of Forth, the capital of Scotland since the reign of James II., is one of the most chastely built cities in Europe. It is often called the Modern Athens, from the taste and elegance of its architecture. In literary fame it greatly surpasses every city in the United Kingdom, with the exception of London. Printing and publishing is carried on extensively, and there are several quarterly reviews of the first class, 10 newspapers, and many other periodical works. But Edinburgh is chiefly celebrated for its University (founded in 1582, erected in 1789), with 34 professors, from 1800 to 2000 students, and a library containing 122,000 printed books and 500 MSS. This University holds a high rank as a medical school, while in mental and moral science it stands unrivalled in Britain. Among its most illustrious professors may be named Dugald Stewart, Thomas Brown, and Sir William Hamilton. Besides the University of Edinburgh there is another distinguished theological seminary called the New College, where the ministers of the Free Church of Scotland receive their theological training. Among the most remarkable public buildings may be mentioned the Castle, situated on a precipitous rock, and once a place of great strength,—it contains the regalia of Scotland, a garrison, and barracks for 2000 men; the Palace of Holyrood, founded by David I. in 1128, which forms the residence of the sovereign when visiting the Scottish capital, and which, along with Beverley in

Yorkshire, has the privilege of sanctuary; St Giles's Cathedral, where the Solemn League and Covenant was subscribed in 1643; Victoria Hall, where the General Assembly of the Established Church of Scotland holds its annual meetings; Parliament House, where the Scottish Parliament met before the Union; the Advocates' Library, the largest and most valuable collection of books in Scotland, containing 200,000 printed volumes and 1700 MSS., and entitled to a copy of every book issued in the United Kingdom; the Signet Library, containing 50,000 volumes; the Royal Institution; the National Gallery; Museum of Science and Art; the High School; and Sir Walter Scott's Monument. **Leith**, two miles N.E. of Edinburgh, of which it is the seaport, has a commodious harbour, and considerable colonial and foreign trade. In 1869, 4134 vessels, of 980,410 tons burden, entered and cleared the port; the exports amounted to £1,500,000, and the customs-dues to £500,000.

HADDINGTON lies E. of Mid-Lothian, and in the basins of the Forth and Tyne. — Carboniferous in the W., Devonian in centre and E., Silurian in the S., and trap in the N. Surface hilly in the S., where are the Lammermoor Hills, level in the centre and N.; soil mostly a clayey loam, and highly fertile. Coal is worked in the carboniferous district, and limestone abounds in many places. The chief manufactures are salt and pottery wares at Prestonpans and Tranent; several extensive distilleries; and fisheries at Dunbar. **Haddington**, a small town on the Tyne, has the largest market in Scotland for agricultural produce; the b.-p. of John Knox and Alexander II. **North Berwick**: near it is Tantallan Castle, an ancient stronghold of the Douglases; and the Bass Rock, at one time the State prison for the kingdom, where many of the Scottish reformers were incarcerated. **Prestonpans**: here Charles Stewart, the Pretender, defeated the royal forces under Cope, in 1745.

BERWICK lies S.E. of Haddington, in the basin of the Tweed.—Silurian in the N., Devonian in W., and carboniferous limestone in S.E. Surface hilly and barren in the N., where are the Lammermoors; but the districts of Lauderdale in the W., and Merse in the S., are highly fertile and well cultivated; agriculture in a highly advanced state; wheat and turnips are the principal crops. Minerals and manufactures unimportant; but many interesting remains of antiquity, such as castles, towers, abbeys, and priories. **Greenlaw** is the smallest county town in Scotland, with the exception of Dornoch. **Dunse**, the birthplace of Duns Scotus, Thomas Boston, and M'Crie the historian.

ROXBURGH, S. of Berwick, is nearly all in the basin of the Tweed.—Carboniferous in S., Devonian in centre and N., Silurian in W., with an extensive tract of trap-rock in the E. Surface hilly in the vicinity of the Cheviots, but elsewhere a level and fertile plain; agriculture improving, but the county is chiefly pastoral; minerals—coal, lime, marl, and freestone; the manufactures are chiefly Scotch tweeds and other woollens. **Jedburgh**, near the Cheviot Hills, is famous in Border warfare, in which it repeatedly suffered by fire. **Hawick**, on the Teviot, is a thriving manufacturing town. **Kelso**, on the Tweed, at its junction with the Teviot, a beautiful little town, with the remains of an abbey built by David I. *Melrose Abbey*, on the Tweed, one of the most magnificent ruins of the kind in Scotland. Another famous abbey in this county and on the same river is *Jedburgh Abbey*, founded in the ninth century; also *Abbotsford*, the beautiful residence of the late Sir Walter Scott.

DUMFRIES, S.W. of Roxburgh, in the basins of the Nith, Annan, and Esk.—Chiefly Lower Silurian, but New Red in the S., and carboniferous limestone in the S.E. The county is divided into three districts—Niths-

dale, Annandale, and Eskdale. Surface generally hilly, especially in the N. and N.E., where is the Lowther range; soil fertile in the lowlands, and affording good pasturage on the high grounds; minerals—limestone, coal, and lead. **Dumfries**, with its suburb **Maxwelltown**, is a thriving town, and the provincial capital of the south of Scotland. Here are interred the remains of Robert Burns, the Scottish poet, and of John Comyn, who was stabbed by Robert Bruce in 1306. **Annan**, on a river of same name, with a good natural harbour: shipbuilding, cotton factories, and rope-works; considerable export trade. **Moffat**, a neat village much frequented by invalids, who resort here to the chalybeate and sulphurous springs.

KIRKCUDBRIGHT, or East Galloway, W. of Dumfries, chiefly in the basins of the Dee and Nith. Nearly all Lower Silurian; surface hilly; climate mild and moist; soil productive in the south, but the main part only affording pasture for sheep, which are reared in great numbers. **Kirkcudbright**, on the Dee, near its mouth in the Solway, has the best harbour in the south of Scotland, but little trade.

WIGTOWN, or West Galloway, W. of Kirkcudbright, a peninsular county in the extreme S.W. of Scotland. Is all Lower Silurian; surface undulating, with many small lakes; soil fertile, well tilled, or in excellent pasture; climate moist and mild; breeds of cattle very superior; abounds in Druidical antiquities. **Wigtown**, a small town, with steam communication to Liverpool. **Newton-Stewart**; hand-loom weaving, and trade in wool with Lancashire. **Stranraer**; hand-loom weaving, tanneries, nail-factories, steam communication with Glasgow, Belfast, and Whitehaven, and submarine telegraph to Carrickfergus. **Port-Patrick**, 21½ m. from Ireland, a small town, with a line of submarine telegraph to Donaghadee.

AYR, N. of Wigtown, lies in the lower basin of the Clyde. Carboniferous in the N. and W., Devonian in the centre, and Lower Silurian with trap in the S. Surface mountainous, but fertile tracts of land along the coast; agriculture in an improved state, and the soil extensively drained; iron and coal mines numerous; manufactures of woollen and cotton stuffs, and embroidered work. Ayrshire consists of three districts—*Carrick* in the S., *Kyle* in the centre, and *Cunningham* in the N. **Ayr**, a fine seaport town, with large exports of coal, an extensive general trade, and several factories, is the scene of the early achievements of Sir William Wallace. **Saltcoats** (so called from its manufactures of salt); shipbuilding docks, weaving and embroidery. **Largs**, memorable for the victory obtained by Alexander III. over Haco, king of Norway, in 1263. **Irvine**, with large export trade in coal; weaving of book-muslin and jaconets. **Kilmarnock**, by far the largest town in the county, has numerous manufactures. **Girvan** is chiefly engaged in the cotton manufacture.

RENFREW, N. of Ayr, in the basin of Clyde, consists of coal-measures in the E., and all the rest trap; surface level, except in the W.; coal, limestone, and freestone abound; the manufactures are shawls, and silk and cotton stuffs; two-fifths arable. **Renfrew** is the nominal capital of the county. **Port-Glasgow**, a thriving town, with a good harbour and docks, was long the port of Glasgow, and continues to be the chief port in the Clyde for importing American timber. **Greenock**, a large thriving town on the Clyde, and the greatest seaport in the west of Scotland; famous for ship and steamboat building; and the birthplace of James Watt, who invented the steam-engine. **Paisley**, an important manufacturing town; has been long famous for shawls, muslins, and cotton thread; coal and iron mines in the vicinity, which afford material for its numer-

ous iron-works. It was the birthplace of Professor Wilson, of Alexander Wilson the ornithologist, and of Robert Tannahill the poet.

LANARK, E. of Renfrew, in the basin of the Clyde.—Carboniferous in the N., Devonian in the centre, and Lower Silurian in the S. Surface very variable, and only one-third arable; coal, iron, and lead mines very extensive and valuable. This is the greatest manufacturing county in Scotland. **Lanark**, the nominal capital, has a large statue of Sir William Wallace. **Glasgow**, the largest city in Scotland, and the third largest in Britain (being exceeded only by London and Liverpool), is the great seat of Scottish commerce and manufactures. Cotton is the principal staple, but there are numerous iron-furnaces and large coal and iron works. It is especially famous for shipbuilding and the construction of machinery. The University, founded in 1450, has 26 professors, about 1200 students, about 80 scholarships, a library of 59,000 volumes, and a museum founded by Dr W. Hunter, containing a valuable collection of natural curiosities. There are many other magnificent public edifices, amongst which are St Mungo's Cathedral, the only perfect specimen of the ancient Gothic in Scotland, and the new Royal Exchange; pop. (in 1871) 548,000; in same year, 8830 vessels of 2,161,050 tons burden, entered and cleared the port. **Rutherglen** and **Hamilton**, considerable manufacturing towns on the Clyde. **Airdrie** and **Wishaw** have extensive coal and iron mines in their vicinity.

LINLITHGOW, or West Lothian, N.E. of Lanark, in the basin of the Forth.—Almost wholly carboniferous; surface beautifully varied and undulating; soil generally fertile, but swampy in the south, and three-fourths arable; coal extensively wrought; manufactures unimportant. **Linlithgow** contains the remains of a royal palace, where Mary Queen of Scots was born in 1542. **Bathgate**, with a well-endowed academy; here is wrought the celebrated Torbanehill mineral. **Bo'ness**, with a coal and iron mine extending under the bed of the Forth.

PEEBLES, E. of Lanark, in the basin of the Tweed.—Almost entirely Lower Silurian, but a little coal and Devonian in the N.W.; surface well wooded, but full of hills and bogs; one-third arable, and two-fifths in pasture; large numbers of sheep and cattle reared. Coal is raised in the N.W.; a few woollen manufactures. **Peebles**, a small town at the confluence of the Tweed and the Eddleston, with various woollen manufactures. **Innerleithen**, with a mineral spring, the "St Ronan's Well" of Sir Walter Scott.

SELKIRK, between Peebles and Roxburgh, in the basin of the Tweed, was formerly called Ettrick Forest.—Wholly Lower Silurian; surface mostly mountainous, but one-half arable; chiefly a pastoral county, producing excellent breeds of sheep and cattle. **Selkirk**, on the Ettrick, near which is the birthplace of Mungo Park, the African traveller; long famous for the manufacture of shoes, and hence the corporation was called "the Sutors of Selkirk." **Galashiels**, with highly-flourishing manufactures of tweeds, is rapidly increasing in population.

THE TEN CENTRAL COUNTIES.

FIFE, a peninsular county between the Firths of Forth and Tay.—Chiefly carboniferous, largely interspersed with trap; surface diversified; two-thirds under cultivation. The "How of Fife," traversed by the Eden, is very productive. Minerals, coal and lime; manufactures, linen; exports—coal, lime, and fish. **Cupar**, on the Eden, and in the centre of the "How of Fife," with spinning-mills and linen manufactures. **St Andrews**, a town of great antiquity, with a celebrated University, the

oldest in Scotland, founded in 1411; consists of two colleges, named St Mary's, which is a divinity hall, and St Salvator, now united with St Leonard's, with 14 professors, and 74 bursaries of £1000 annual value. St Andrews was long the ecclesiastical capital of Scotland, and was the scene of many of the most remarkable political and religious events in Scottish history. **Kirkcaldy** has considerable trade; and is the b.-p. of Adam Smith, author of 'The Wealth of Nations.' **Dunfermline**, a place of great historical interest, and noted in modern times for its linen manufactures; here was born Charles I., and here Charles II. subscribed the Solemn League and Covenant in 1650.

KINROSS, W. of Fife, in the basin of the Forth, is the second smallest county in Scotland.—Coal-measures in the S. and E., and trap in the N. and W.; surface varied and well cultivated; minerals and manufactures unimportant. **Kinross**, on Loch Leven, a small town with manufactures of cotton, tartan shawls, and damasks.

CLACKMANNAN, W. of Kinross, in the basin of the Forth, is the smallest county in Scotland.—Principally carboniferous, but trap-rocks in the N. The river Devon, whose banks are highly fertile, traverses the county on its way to the Forth. Principal minerals—coal, ironstone, and sandstone. **Alloa**, the principal town, near the head of the Firth of Forth, has considerable export trade and shipbuilding, and is noted for its excellent ale.

STIRLING, W. of Clackmannan, in the basins of the Forth and Clyde.—Carboniferous and trap in E. and S., Devonian in the centre, and crystalline rocks in the W. Surface mountainous, especially in the W., where Ben Lomond attains a height of 3192 feet. The Carse lands, along the Forth, are level and fertile, and two-thirds of the whole county arable. Minerals—coal, ironstone, and freestone. Here are the celebrated Carron Iron-works. Manufactures—carpets, tartans, tweeds, winceys, blankets, paper, and chemical products; many cotton-mills, foundries, dye-works, and distilleries. **Stirling**, on the right bank of the Forth, is a place of great historical importance in the early annals of Scotland, contains a castle of great antiquity, which is one of the four military depots still upheld in Scotland by virtue of the Articles of Union. **Falkirk** is the seat of three great annual cattle-fairs, called "Trysts," at which usually 300,000 cattle and sheep exchange hands. Two memorable battles were fought here; one between Wallace and Edward I. in 1298, and the other between Prince Charles Edward and the royal army in 1746. **Bannockburn**, famous for a victory gained by the Scots, under Bruce, over the English in 1314. **Kilsyth**—cotton-weaving, coal and iron mines; here Montrose gained a victory over the Covenanters.

DUMBARTON, W. of Stirling, in the basin of Clyde.—Geological structure same as last; surface mostly mountainous; soil poor, but fertile and well cultivated in the lowlands; iron and coal mines, with quarries of limestone and freestone; cotton-mills, glass-works, paper-mills, and printfields. **Dumbarton**, on the Leven, near its confluence with the Clyde, with an ancient castle, one of the four upheld by Government. **Helensburgh**, a watering-place on the Clyde. **Kirkintilloch**, with manufactures of hats, cotton-weaving, and iron-foundries.

BUTE AND ARRAN, two large islands, with several smaller, in the Firth of Clyde.—Bute is Devonian in S., Silurian in the middle, and mica slate in N.; while Arran is extremely varied, being almost an epitome of the geology of Great Britain. Both islands are mountainous in the N. and undulating in the S. Goatfell, in Arran, attains a height of 2874 feet, and the entire island is celebrated for its romantic scenery and interesting geological features. The climate of Bute is very mild and moist, which

renders it the resort of many invalids. **Rothesay**, at the head of a bay on the E. side of Bute, is a famous resort of invalids and sea-bathers. **Lamlash**, in Arran, with a well-protected harbour.

ARGYLL, N. of Bute, and in the extreme west of Scotland, chiefly consists of peninsulas and islands.—Metamorphic rocks, with large patches of granite and trap. It is the second largest county in Scotland, and one of the most thinly peopled, having only 27 persons to each square mile. Surface mountainous, and only a small part cultivated; cattle largely reared for exportation. **Inverary**, on Loch Fyne, principally supported by its herring-fishery. **Campbelton**, on the E. coast of Cantyre, with distilleries and malt-houses. **Dunoon**, a fashionable watering-place on the Clyde.

PERTH, N.E. of Argyll, in the basins of the Tay and Forth.—Chiefly metamorphic, but Devonian and coal in the S. and E. It is the third largest county in Scotland; surface extremely diversified, and comprising both a highland and lowland region; the Grampian range traverses it in a north-easterly direction. The Carse of Gowrie is very fertile, but only two-thirds of the county is under culture; agriculture greatly improved; beautiful scenery and large plantations. Minerals—coal, limestone, sandstone, marble, and slate; and lead found in some places; manufactures unimportant, except at Perth. **Perth**, a beautiful city on the Tay, was the capital of Scotland till 1440; had the royal palace of *Scone* in the vicinity: it is very ancient, and figures prominently in Scottish history. **Crieff**, a beautiful little town near the foot of the Grampians. **Auchterarder**: here originated the famous controversy between the civil and ecclesiastical courts, which led to the dismemberment of the Church of Scotland in 1843.

FORFAR, or Angus, E. of Perth, in the basins of the Tay, South Esk, and North Esk.—Nearly all Devonian, but metamorphic in the N.W.; surface varied, and divided into four parallel belts—viz., Braes of Angus, Vale of Strathmore, Sidlaw Hills, and the plain along the Firth of Tay. Soil various, but agriculture in a highly advanced state. Forfarshire is the chief seat of the coarse-linen manufacture of Scotland. **Forfar**, in the fertile valley of Strathmore, is the nominal capital. **Dundee**, at the mouth of the Firth of Tay, is the third largest town in Scotland, and the principal seat of the linen, jute, and glove manufacture; is a highly-flourishing town, with a large export trade; in 1869, 2543 vessels, of 472,015 tons burden, entered and cleared the port. **Arbroath**, also called **Aberbrothock**, from its position on the mouth of the little river Brothock—a large thriving town, with numerous manufactures. **Montrose** exports more corn than any other seaport in Scotland; numerous manufactures; the birthplace of the celebrated Marquess of Montrose and of Joseph Hume. **Brechin**, an ancient Episcopal city, with an old cathedral; in its vicinity is the residence of the Earl of Dalhousie.

KINCARDINE, or the Mearns, N.E. of Forfar, between the N. Esk and the Dee.—Devonian in the S. and gneiss in the N.; surface highly mountainous, being chiefly occupied by the Grampians; but the "How of the Mearns," in the S. and E., is a low, rich, arable tract. The mountains yield extensive pasture for sheep, and about half of the county is under cultivation. Granite and sandstone are the principal minerals; and the chief manufactures are coarse linen and wooden snuff-boxes. **Stonehaven**, a small town between the rivers Cowie and Carron, has a herring-fishery, and some manufactures of cotton and linen. Near it is Dunottar Castle, formerly the residence of the Earls Marischal, and celebrated in Scottish history.

The Ten Northern Counties.

Aberdeen, N. of Kincardine, and between the Dee and Deveron.—Granite and metamorphic rocks, with two patches of Devonian in the W. and N.; surface very mountainous in the S.W., along the Grampians; the rest level or undulating; only one-third arable, which is under the most skilful cultivation; more fat cattle reared than in any other county in Scotland. The county is especially celebrated for its beautiful granite, large quantities of which are shipped to London; there are also important slate and sandstone quarries, and extensive salmon-fisheries. Manufactures recently very flourishing, especially woollen, cotton, and linen, but now greatly declined. Balmoral Castle, the Highland residence of Queen Victoria, on the river Dee, is in this county. **Aberdeen**, between the mouths of the Dee and Don, is the fourth most populous town in Scotland; it is a handsome city, built of beautiful grey-coloured granite; is a place of great trade, and the seat of a flourishing university, with 23 professors and 270 scholarships: in 1869, 2929 vessels, of 573,650 tons burden, entered and cleared. **Peterhead**, a thriving town on the north-east coast, near Buchanness, the most easterly point in Scotland; has an important herring-fishery, and is the great emporium of the whale-fishery.

Banff, N.W. of Aberdeen, in the Moray basin, and between the Deveron and the Spey.—Mainly metamorphic rocks; but granite in the N., and Old Red in the W.; surface mountainous, except along the coast, where it is level and moderately fertile; only about a third is under cultivation; cattle-breeding is the principal branch of rural industry; but there are important fisheries carried on in the small towns and villages along the coast. The principal minerals are limestone for agricultural purposes, and granular quartz, exported from the Hill of Durn, near Portsoy, to the English potteries. **Banff** and **Macduff**, seaport towns, at the mouth of the Deveron, with considerable export trade. **Cullen**, **Buckie**, and **Portsoy**, neat little towns on the Moray Firth, with extensive herring-fisheries. **Keith**, the birthplace of James Ferguson.

Moray, or Elgin, W. of Banff, in the Moray basin, between the Spey and the Findhorn.—Old Red in the N., which is highly fossiliferous, and gneiss in the remainder; surface, level along the firth, elsewhere mountainous; only about one-fifth under cultivation; soil a deep loam, or light and sandy; very fertile in the N., and highly cultivated; fine crops of wheat. Sandstone is the principal mineral, and is extensively exported; other exports are grain, cattle, salmon, and timber from the ancient forests of Strathspey and Darnaway. The principal manufactures are woollens; tanneries, distilleries, and tileworks are numerous. **Elgin**, on the Lossie, about five miles from its seaport (Lossiemouth), has the remains of a beautiful cathedral, erected in 1224—one of the finest ruins in Scotland. **Forres**, a beautiful little town near the Findhorn, with enchanting scenery; celebrated in Shakespeare's 'Macbeth.' **Lossiemouth**, a thriving seaport town; here, in 1869, a very rich vein of lead was discovered, with traces of copper.

Nairn, W. of Moray, in the Moray basin, is drained by the Nairn and Findhorn.—Old Red in the N., gneiss in the S., and some granite in the W. Surface, mostly rugged and mountainous, but nearly one-half cultivated; agriculture in an advanced state, but no important minerals or manufactures. **Nairn**, an antiquated-looking little town, with exports of fish, stones, grain, and timber; near it Cawdor Castle, where, according to tradition, King Duncan was murdered.

INVERNESS, S.W. of Nairn, chiefly in the Ness or Moray basin, is the largest county in Scotland; area, 4256 square miles; population 88,888, being 21 persons to the sq. m.—Gneiss and mica slate, with a patch of Old Red in the N.E., but trap and Old Red in Skye; surface highly mountainous; Ben Nevis, the highest mountain in the British Isles (4406 feet), is in the S.W. It is well wooded, and a chain of lakes, connected by the Caledonian Canal, passes through the centre. Soil light and unproductive, with more than one-half wholly waste; but there are immense forests where the red and roe deer roam in safety. The county is chiefly pastoral, and the principal exports are black cattle, sheep, and wool. Here the Celtic language and character are still found in their purest forms. **Inverness**, at the mouth of the Ness, and near the entrance of the Caledonian Canal, a fine, old, romantic town, regarded as the capital of the Highlands, and the most populous town north of Aberdeen, with which it is connected by railway. It is the only important town in Britain in which the Gaelic language is usually spoken by all classes of the inhabitants. Near it, **Culloden Moor**, where the pretensions of the Stewart dynasty were finally extinguished in 1746. **Fort George**, the most complete fortification in the kingdom, has accommodation for 2000 men.

ROSS, N. of Inverness, and between the Moray Firth and the Minch.—Almost wholly metamorphic, but Old Red along the two coasts; surface very mountainous, and only one-fifth arable; fertile on the Moray Firth, producing excellent wheat, but the main portion is pastoral; exports chiefly sheep and wool. **Dingwall**, an antique-looking little town at the head of the Cromarty Firth; near it, **Strathpeffer**, with highly medicinal chalybeate and sulphurous springs, resembling those of Harrogate, and frequented by a large number of invalids. **Tain**, a neat thriving town on the Dornoch Firth, and the most important between Inverness and Wick.

CROMARTY consists of fourteen detached portions, scattered over the northern half of Ross-shire. This singular arrangement into patches was formed at the request of a former Earl of Cromarty, who desired that one county might contain all his lands, wherever situated. Its geology, drainage, soil, &c., same as Ross. The Cromarty Firth is completely land-locked, and affords excellent shelter for shipping. **Cromarty**, at the entrance of Cromarty Firth, is irregularly built, and of antique appearance; the birthplace of Hugh Miller, who commenced here his illustrious geological career.

SUTHERLAND, N. of Ross, and between the Moray Firth and the Atlantic.—Nearly all transition and Silurian rocks, with a little Old Red in N.W. and S.E., and an oolitic patch at Brora; surface wild and mountainous; scenery in many places singularly grand, and containing many lakes, which discharge their waters in three directions. The interior wholly depopulated, this being the centre of the far-famed Highland clearances, which commenced in 1807, and were repeated at various intervals. A vast number of the inhabitants have been expatriated, and the remainder reside in villages and hamlets along the coast, where they support themselves mainly by fishing. The interior is now let out into immense sheep-farms, which are chiefly in the hands of English capitalists; about 220,000 sheep are exported annually. **Dornoch**, on the Dornoch Firth, opposite Tain, is a mere village, and the smallest county town in the British Isles—population, 625. **Golspie**, a beautiful village on the east coast, with Dunrobin Castle, the ancient residence of the Earls of Sutherland, in the vicinity.

CAITHNESS, E. of Sutherland, and in the extreme N.E. of the mainland of Scotland, is a peninsula, lying between the Moray and Pentland Firths. —Almost wholly Devonian, which is highly fossiliferous in many parts, but along the west border there are several patches of granite; surface flat, destitute of trees, and uninteresting; soil various, a large portion being heath-covered moors, and only one-fourth under cultivation. Many good roads and piers have been recently constructed for the accommodation of the numerous fishing villages and hamlets on the east coast. About 200,000 barrels of salted herrings are exported annually; other exports are salmon, oats, and flagstones for paving. This county was, in the middle ages, held by the kings of Norway; most of its inhabitants are of Scandinavian descent, and speak a peculiar dialect of the Lowland Scotch, considerably resembling that of Orkney. **Wick**, including **Pulteneytown** which is twice its size, is a flourishing town on the east coast, with an immense pier and breakwater now in course of erection. For the last half-century it has been the headquarters of the Scottish herring-fishery. Upwards of 1000 boats are here employed, chiefly manned by Western Highlanders, who in the month of July congregate here in vast numbers. Here are two spirited weekly newspapers, and a rapidly-increasing export trade, consisting chiefly of herrings to the Baltic. **Thurso**, a beautiful little town on the Pentland Firth, and the most northerly on the mainland of Scotland. Its position is unfavourable to its prosperity as a fishing-town, being exposed to the north, and the rapid dangerous current of the Pentland Firth, across which the Orkneys are seen in all their bold grandeur.

ORKNEY AND SHETLAND form an insular county N.E. of the mainland. The former consists of an archipelago of 67 islands and islets, the principal of which are Pomona, South and North Ronaldsha, Hoy, Sanda, Rowsa, and Westra; shores bold, the interior generally undulating; climate mild; little snow falls in winter, but the summers chill and moist. Geological structure: wholly Devonian; soil good, but agriculture very backward: many of the people employed in fishing, or in taking wild birds and eggs; great quantities of lobsters are shipped to the London market. The Orcadians are expert seamen, and many of them are engaged in the Greenland whale fishery. Shetland, 48 miles N.E. of Orkney, consists of an archipelago of about 90 islands and islets, of which only 25 are inhabited. Mainland, the largest island, contains one-half the whole area, and more than a half of the population. The next largest are Yell and Unst, the latter being the most northern island in the British archipelago (lat. 60° 50′ N.)—Devonian in the S.; all the rest gneiss, with large patches of trap and granite; climate mild, but very damp and variable; surface generally mountainous, covered with heath, and destitute of trees: a considerable quantity of tolerable land has been made by long culture. The Shetland ponies are remarkable for their small size and hardihood, and are largely exported; other exports are ling, tusk, and cod. The only native manufacture is knitted hosiery; and the only mineral of importance is chromate of iron, which is exported for a pigment. The people of both archipelagos are of Norse extraction. Their language is now English, but indubitable traces of their Scandinavian origin are found in their names, manners, customs, superstitions, language, and antiquities. They became subject to Norway in the ninth century, embraced Christianity in the thirteenth, and were annexed to the Scottish crown in 1468. **Kirkwall**, the capital of the Orkneys and of the county above named, on a bay on the N.E. side of Pomona, with an ancient cathedral named St Magnus (built 1137), and

some manufactures of linen. **Lerwick**, the principal town in Shetland, on the S.E. of Mainland, is the most northern town in the British Isles; has manufactures of straw-plait, and whale, cod, and herring fisheries.

Capes and Promontories.—St Abb's Head, in Berwickshire: Fifeness, E. of Fife; Buchanness (Aberdeenshire), the most E. point of the mainland of Scotland; Kinnaird Head, at the entrance of the Moray Firth; Tarbetness, the E. extremity of Ross; Noss Head, and Duncansby Head, E. of Caithness; Dunnet Head, the most N. point of the mainland; Oldhead and Dennis Head, the S. and N. extremities of Orkney; Sumburgh Head, S. of Shetland; Hermaness, N. of Shetland, the most northern point in the British archipelago; Cape Wrath, N. of Sutherland; Butt of Lewis, N. of the Hebrides; Aird Point, N. of Skye; Point of Ardnamurchan (Argyll), the most western point of Great Britain; Mull of Cantyre, S. of Argyll; Mull of Galloway and Burrow Head, S. of Wigtown.

Islands.—The islands are very numerous, especially on the north and west coasts, and are naturally divided into three groups:—

On the North Coast.—The Orkneys, N.E. of Caithness: principal, Pomona and Hoy. The Shetlands, N.E. of the Orkneys: principal, Mainland, Yell, Fetlar, and Unst. *On the West Coast.*—The Hebrides or Western Islands, 160 in number, of which 70 are inhabited, and divided into two clusters, the Outer and Inner Hebrides, which are separated by the Little Minch. The *Outer Hebrides*, called also *Long Island*, lie W. of Sutherland and Ross: the principal are, Lewis, the largest island in Scotland; N. Uist, Benbecula, S. Uist, and Barra. The *Inner Hebrides*: principal, Skye, Mull, Iona, Jura, and Islay. Arran, Bute, and the Cumbraes, in the Firth of Clyde. *On the East Coast.*—May, Inchkeith, Inchcolm, in the F. of Forth; Inchcape, or the Bell Rock, off the entrance of the F. of Tay; Stroma, bet. Caithness and Orkney; Fair Island, bet. Orkney and Shetland.

Bays and Estuaries.—These are also numerous, and generally penetrate far into the mainland, in a N.E. and S.W. direction. Those on the east side are called *firths* (from Scandinavian *fiord*, pronounced "fiurth"), those on the W., *lochs*, corresponding to the *loughs* of Ireland. The principal are:—

F. of Forth, bet. the Lothians and Fife; St Andrews Bay, N.E. of Fife; F. of Tay, bet. Fife and Forfar; Moray F. in the N.E. of Scotland, 75 m. wide, bet. Kinnaird Head and Duncansby Head (its main parts are, Beauly F., bet. Inverness and Ross; Cromarty F., bet. Ross and Cromarty; Dornoch F., bet. Ross and Sutherland); Pentland F., bet. Caithness and Orkney; Thurso Bay, N. of Caithness; Kyle of Tongue and Loch Eribol, N. of Sutherland; Loch Laxford and Loch Enard, W. of Sutherland; Lochs Broom, Greinord, Ewe, Gairloch, Torridon, Carron, and Alsh, W. of Ross; Sleat Sound, bet. Inverness and Skye; Loch Hourn, in W. of Inverness; Sound of Raasay, bet. Skye and Raasay; Lochs Snizort and Bracadale, in W. of Skye; Sound of Harris, bet. Harris and N. Uist; Loch Sunart and Sound of Mull, bet. Mull and the mainland; Lochs Linnhé and Eil, forming the W. entrance to the Caledonian Canal; Loch Etive and Sound of Jura, W. of Argyll; Kilbrannan Sound, bet. Cantyre and Arran; Loch Fyne, in S. of Argyll; Sound of Bute,

bet. Arran and Bute; Loch Long, bet. Argyll and Dumbarton; Firth of Clyde, separating Arran, Bute, and Dumbarton from Ayr and Renfrew; Loch Ryan, Luce Bay, and Wigtown Bay, in Wigtownshire; Solway F., bet. the S.W. of Scotland and the N.W. of England; the Minch, bet. the Mainland and Lewis; Little Minch, bet. Skye and Long Island; Sound of Islay, bet. Islay and Jura; North Channel, bet. Scotland and Ireland.

Mountain System.—Scotland is a highly-mountainous country, there being few or no localities where mountain-ranges do not limit the observer's view in one or more directions. Proceeding from N. to S., we find five principal ranges, all of which are nearly parallel to each other, and follow the general direction of N.E. and S.W., similar to the principal estuaries.

The Northern Highlands, consisting of detached groups that commence at the southern border of Caithness, and cover a large portion of Sutherland, Ross, and Inverness, separate the waters which flow into the Moray Firth from those that find their way to the Atlantic. The principal summits are: Ben Attow, between Ross and Inverness, 4000 feet; Ben Wyvis, near Dingwall, 3422 feet; Ben Dearg, near head of Loch Broom, 3551 feet; Ben More, in Assynt, 3281 feet; Ben Cliberich, S. of Loch Naver, Sutherland, 3157 feet; Morven, in S.E. of Caithness, 2331 feet.

The **Grampians,** the loftiest mountains in the British Isles, cross the country in its widest part. They separate, for the most part, the Highlands from the Lowlands, and the basins of the Spey and Dee from that of the Tay on the east side, and the great valley of Glenmore and the Clyde basin on the west. Length, from Stonehaven to Loch Linnhé, about 100 miles, the height ranging from 2000 feet to upwards of 4000 feet. Ben Nevis, at the western extremity, 4406 feet high, is the culminating-point of the British Isles. The main range sends off two great lateral branches, one to the N. from the middle of the range, which soon bifurcates and encloses a large portion of Banffshire; and the other to the S. from near Loch Rannoch, in Perthshire, to the isthmus of Cowal in Argyll. Principal summits: Ben Nevis,* in the S.W. of Inverness, 4406 feet; Loch-na-gar, in Aberdeenshire, 3777 feet; Ben Macdui, in the S.W. of Aberdeenshire, 4295 feet; Cairngorm, in Banffshire, 4095; Ben Avon, bet. Banff and Aberdeen, 3826 feet: Cairntoul, near Ben Avon, 4245 feet; Ben Lawers, 3984, and Schiehallion, 3564 feet, in Perthshire; Ben Lomond, in Stirling, 3192 feet; Ben Cruachan, in Argyll, 3670 feet.

Ochil and Sidlaw Range, parallel with the Grampians, and separated from them by the valley of Strathmore, consists of three small chains, which extend across the country from Forfarshire to Stirlingshire, and form the N. water-parting of the Tay, Forth, and Clyde basins. The *Sidlaw Hills* extend from the river Dean in Forfarshire, to Perth on the Tay, but are of small elevation, the highest summit, the Kingseat, being only 1255 feet high. The *Ochils*, between Stirling and the F. of Tay, attain, in Ben Cleugh, an elevation of 2300 feet, and the *Campsie Fells*, in Stirlingshire, of 1500 feet.

The **Lammermoor and Pentland Range,** separated from the former by the F. of Forth, and forming the S. boundary of the Forth basin, consists

* No mountain in Scotland attains to the limit of perpetual congelation, which, in the latitude of the Grampians, is 4500 feet. Ben Nevis only wants about 100 feet of altitude to be capped continually with snow. Some of the ravines in the Grampians and North Highlands retain the snow over summer.

of the following members: the *Lammermoor Hills*, between Haddington and Berwick—highest summit, 1753 feet; the *Moorfoot Hills*, a W. continuation of the Lammermoors, 2130 feet; the *Pentland Hills*, in Mid-Lothian, 1806 feet; and *Tinto Hill*, in Lanarkshire, 2308 feet.

The **Cheviot and Lowther Range** extends from Peel Fell in the Cheviots proper (for which see "England," p. 135), to Loch Ryan in Wigtownshire, and forms the great water-parting of the S. of Scotland, separating the basins of the Clyde and Tweed on the N. from those of the Solway and Tyne on the S. The highest summits of this range are: Cheviot Peak, 2668 feet, Carter Fell, 2020 feet, in Northumberland; Ettrick Pen, in Selkirk, 2200 feet; Hart Fell, in Dumfries, 2638 feet; Broad Law, in Peebles, 2741 feet; Lowther Hill, in Lanark, 2522 feet; Mt. Merrick, 2764, and Black Larg, 2890 feet, both in Kirkcudbright.

River-Basins.—As the mountain-ranges in Scotland stretch from N.E. to S.W., so the intervening river-basins, in their greatest length and inclination, follow the same direction. The eight most important basins are those of the Tay (2090 sq. m.), Tweed and Solway (1990), Forth (1400), Dee and Don (1230), Spey (1245), Clyde (1145), Linnhé basin (1200), Moray basin (about 5000).

Three of the eight basins lie N. of the Grampian chain—viz., the Moray basin, and the basin of the Dee and Don (the waters of which nearly unite), on the E. side, and the Linnhé basin on the W.; and their united areas comprise almost the whole of the district known as the Scottish Highlands. Immediately S. of them lie the basins of the Tay and Forth on the E. side, and that of the Clyde on the W.; these touch each other, and are separated from the former three by the Grampian chain, and from the Tweed and the Solway basins by the Lammermoor and Lowther ranges: they are fertile and highly cultivated; contain most of the large towns, and many rich mines of coal, ironstone, and other valuable minerals; and have been called respectively the garden, the granary, and the workshop of Scotland. The first is separated from the second by the Ochil Hills, and the second from the third by the Campsie Fells. The basins of the Tweed and Solway constitute the Southern Highlands, and form an excellent pastoral country. They are separated from England by the Cheviot range, and from each other by the Lowthers; while the Tweed basin is separated from the Forth by the Lammermoor Hills, and the Solway basin from that of the Clyde by the Lowther range.

Table of Rivers and Towns.—For the arrangement adopted in the following table, compare what is said under "England," the only difference being that here large towns, or those printed in Roman letters, denote those having 2500 inhabitants or upwards; county towns are in SMALL CAPITALS, and all others in *italics*. One hundred rivers are here enumerated, 33 of which enter the ocean directly, the remainder being their tributaries; and 300 towns, one-third of which have a population exceeding 2500.

Basins inclined to the North Sea.

Rivers.	*Towns.*	*Rivers.*	*Towns.*
Tweed, ...	Berwick (England), *Coldstream*, Kelso, *Earlston*, n., *Melrose*, *Innerleithen*, PEEBLES.	Blackadder,	GREENLAW.
Whiteadder, *l*	Dunse.	Teviot, ...	Kelso, Hawick, *Wilton*.
		Jed, ...	JEDBURGH.
		Leader, *l* ..	*Lauder*.

Basins inclined to the North Sea (continued).

Rivers.	*Towns.*
Gala, *l*.	Galashiels.
Ettrick, ...	SELKIRK.
Eddleston, *l*	PEEBLES.
Biggar, *l*. . . .	*Biggar.*
Eye, ...	*Eyemouth.*
Co. of Haddington,	Dunbar.
Tyne, ...	HADDINGTON.
Forth, ...	*North Berwick, Cockenzie, Tranent*, n., *Prestonpans*, Musselburgh, Portobello, Leith, EDINBURGH, *Newhaven, Queensferry*, Bo'ness, *Grangemouth*, all S. of the Firth; *Crail, Anstruther, St Monance, Pittenweem*, Leven, *Buckhaven, Wemyss, Dysart*, Kirkcaldy, *Kinghorn*, Burntisland, *Inverkeithing, Kincardine*, Alloa, all on N. side; STIRLING.
Leven, *l*. . . .	Leven, *Markinch, Leslie*, KINROSS, *Milnathort.*
Ore, ...	*Lochgelly.*
Esk, ...	Musselburgh, Dalkeith, *Loanhead, Penicuick.*
Almond, . .	*Whitburn.*
Lyne, *l*	Dunfermline, *Crossgates, Cowdenbeath*, n., *Oakley*, n.
Avon, ...	LINLITHGOW, Bathgate, *Armadale, Crofthead*, n.
Carron, ...	*Grangemouth, Carron, Stenhousemuir, Lauriston*, Falkirk, n., *Camelon, Dunipace, Denny.*
Black Devon, *l*	CLACKMANNAN.
Devon, *l*. . . .	Alloa, Tillicoultry, *Dollar.*
Bannock, . .	*Bannockburn.*
Allan, *l*	*Bridge of Allan, Dunblane, Blackford.*
Teith, *l*	*Doune, Callander.*
Eden, ...	St Andrews, CUPAR-FIFE, *Falkland, Auchtermuchty.*
Tay, ...	*Ferry-Port-on-Craig*, Broughty Ferry, Dundee, *Errol*, Newburgh, PERTH, *New Scone, Stanley, Dunkeld, Aberfeldy.*
Earn, ...	*Abernethy, Muthill*, n., Crieff, *Comrie.*
Dunning,	*Dunning.*
Ruthven,	Auchterarder.
Almond, . . .	*Methven.*
Isla, *l*	*Coupar-Angus.*
Ericht, . . .	Blairgowrie, *Rattray.*
Dean, *l* . .	FORFAR.
Gairie, . .	Kirriemuir.
Alyth, ...	*Alyth.*
Brothock, ...	Arbroath, *Friockheim*, n.
S. Esk, ...	Montrose, *Ferryden*, Brechin, *Southmuir*, n.
N. Esk, ...	*Marykirk.*
Luther, *l* . . .	*Luthermuir*, Laurencekirk.
Bervie, ...	*Bervie.*
Carron, ...	STONEHAVEN.
Dee, ...	ABERDEEN, *Banchory, Balmoral Castle.*
Don, ...	Old Aberdeen, Woodside, *Kintore*, Inverury.
Urie, *l*.	Inverury, *Old Meldrum*, n.
Ythan, ...	*Ellon.*
Ugie, ...	Peterhead, *Strichen, Pitsligo.*
N. Co. Aberdeen,	Fraserburgh, *Rosehearty.*
Deveron, ...	Banff, Macduff, *Turriff*, Huntly.
Isla, *l*	Keith.
N. Co. Banff,	*Portsoy*, Cullen, Buckie.
Spey, ...	*Fochabers, Rothes, Grantown, Kingussie.*
Fiddich, ...	*Dufftown.*
Lossie, ...	*Lossiemouth, Branderburgh*, ELGIN.
Co. of Moray,	*Hopeman, Burghead.*
Findhorn, ...	Forres, n.
Nairn, ...	NAIRN.
Beauly Firth and R. Ness,	*Fort George, Avoch, Fortrose, Beauly*, INVERNESS.
Cromarty F.,	CROMARTY, *Invergordon, Alness, Evanton*, DINGWALL, *Marybury.*
Dornoch F., . .	Tain, DORNOCH.
E. Co. Sutherland,	*Golspie, Helmsdale.*
E. Co. Caithness,	*Lybster*, WICK.
Pentland Firth,	Thurso.

Basins inclined to the Atlantic.

Loch Broom,	*Ullapool.*
L. Carron, ...	*Plockton.*
Sound of Mull,	*Tobermory* (Mull).
Lochs Linnhé and Eil,	*Oban, Fort William.*

Basins inclined to the Atlantic (continued).

Rivers.	*Towns.*
Kilbrannan Sd. and L. Fyne,	Campbelton, *Tarbert*, *Lochgilphead*, INVERARY.
Clyde, F. and R.,	*Millport* (Cumbrae), ROTHESAY (Bute), AYR, *Troon*, Irvine, Saltcoats, Ardrossan, Largs, Dunoon, *Gourock*, Greenock, Helensburgh, Port-Glasgow, DUMBARTON, *Duntocher*, RENFREW, Glasgow, *Shettleston*, *Tollcross*, *Springburn*, Rutherglen, *Bellshill*, *Bothwell*, *Holytown*, n., *Low Blantyre*, Hamilton, Motherwell, n., Carluke, n., *Kirkfieldbank*, LANARK, *New Lanark*.
Doon, *l*.....	AYR, n., *Dalmellington*.
Ayr, *l*.....	AYR, *Tarbolton*, *Katrine*, *Muirkirk*, *Cumnock*.
Lugar, *l* ..	*Auchinleck*.
Irvine, *l*....	Irvine, *Eglinton*, *Hurlford*, Kilmarnock, *Kilmaurs*, Galston, New Mills, *Darvel*.
Garnock,..	Kilwinning, Dalry, *Peesweep*, Kilbirnie.
Annock,..	Stewarton.
Cessnock,	*Mauchline*.
l,	
Leven, ...	DUMBARTON, Renton, Alexandria, Bonhill.
Cart, *l*.....	RENFREW, Paisley, *Nitshill*, Pollockshaws, *Busby*, *Eaglesham*.
Black Cart, *l*,	*Br. of Weir*, *Linwood*, Johnstone, Kilbarchan, *Lochwinnoch*, Beith.
Levern, *l*..	*Thornliebank*, n., Barrhead, *Neilston*.
Kelvin, *l*....	Kirkintilloch, Kilsyth, Cumbernauld, n.
W. Calder,..	*Calder*, *Calderbank*, Airdrie, Coatbridge.
E. Calder, ..	Wishaw, *Cambusnethan*, *Coltness*, n., *Shotts*.
Avon, *l*	Hamilton, Strathaven.
Nethan, *l*. ..	*Lesmahago*.
Douglas, *l*..	*Douglas*.
Girvan, ...	Girvan, *Crosshill*, Maybole.
Loch Ryan,...	Stranraer.
W. Co. Wigtown,	*Port-Patrick*, *Glenluce*.
Wigtown Bay,	*Whithorn*, WIGTOWN, *Crestown*.
Cree, ...	Newton-Stewart.
Fleet, ...	*Gatehouse*.
Dee (Solway F.),	KIRKCUDBRIGHT, *Castle-Douglas*.
Ken, *l*	Dalry.
Urr (do.), ...	*Dalbeattie*.
Nith (Solway),	Maxwelltown, DUMFRIES, *Thornhill*, *Cumnock*.
Annan (do.), ..	Annan, *Ecclefechan*, *Lockerby*, n., *Lockmaben*, *Moffat*.

Lakes.—With the exception of Switzerland, there is no country in Europe more remarkable for its lakes than Scotland. They are in general very small in size, as the deep inlets of the ocean prevent any great collection of inland waters; but they are celebrated for their beauty and wild grandeur. Loch Lomond, the largest of them, 21 miles long, 5¼ broad, and with an area of 40 square miles, is justly famed for its splendid scenery. Arranged in the order of the river-basins in which they are situated, they are easily remembered.

Tweed Basin—*St Mary's Loch*, in Selkirkshire, drained by the Yarrow. Forth—*Loch Ard*, in Perthshire, one of the sources of the Forth; *Loch Leven*, in Kinross, drained by the Leven; and *Lochs Vennachar*, *Achray*, *Katrine*, *Lubnaig*, and *Voil*, all drained by the Teith. Tay—*Lochs Dochart* and *Tay*, in Perthshire, at the source of the Tay; *Loch Earn*, at the source of the Earn; and *Lochs Tummel*, *Rannoch*, *Erricht*, *Lydoch*, drained by the Tummel. Ness—*Ness*, *Oich*, *Garry*, and *Quoich*, in Inverness. Conan—*Glass*, *Luichart*, *Fannich*, in Ross. Oykill—*Loch Shin*, 18 miles long, in Sutherland. Naver—*Loch Naver*, in Sutherland. Ewe—*Loch Maree*, in Ross. Moidart—*Shiel*, Inverness and Argyll. Linnhé and Spean Basin—*Lochy*, *Arkaig*, and *Laggan*, in Inverness; and Lochs *Awe* and *Avich*, in Argyll, drained by the Awe. Clyde—*Loch Lomond*, drained by the Leven.

Internal Communication.—Scotland, being a highly-mountainous country, can never vie with the sister kingdom in the extent or completeness of her internal communication; yet her noble firths and estuaries, which indent the coast in all directions, give her important natural advantages; while her turnpike roads, canals, and railways, abundantly attest the energy and public spirit of her sons.

RAILWAYS.—Within the last ten years railway communication in Scotland has made extraordinary progress. In 1859 the number of miles open for traffic was 1342; in 1864 it was 2105; while in 1874 it amounted to 2612. In 1859 few railways existed beyond the central counties, or the basins of the Forth, Clyde, and Tay; but they are now numerous in the south of Scotland; while in the northern counties they penetrate to the extreme confines of the mainland—Wick and Thurso being now the termini. In north-western Scotland the only lines yet constructed are from Callander to Oban, and from Dingwall to Skye.

CANALS.—The principal are the following: *Caledonian Canal*, between the Beauly Firth and Loch Linnhé, connects the Moray Firth with the Atlantic; total length, 60 miles—but only 23 miles required to be executed, as the canal passes through Lochs Ness, Oich, and Lochy, and terminates in Loch Eil, an arm of the sea. Inverness stands near the one extremity, and Fort William near the other. *Forth and Clyde Canal*, from Glasgow to Grangemouth in Stirling, unites the Irish with the North Sea; length, 35 miles; finished in 1790, and extended from near Falkirk to Edinburgh by the *Union Canal*, finished in 1822, and 31 miles long. *Paisley Canal*, from Glasgow, through Paisley, to Johnstone in Renfrew; length, 11 miles. *Monkland Canal*, between Glasgow and Airdrie; 12 miles. *Crinan Canal*, across the isthmus of Cantyre, connects Loch Fyne with the Sound of Jura, 9 miles. The total length of canal communication in Scotland is 225 miles.

TURNPIKE ROADS.—In consequence of the excellent materials for road-making which everywhere abound, and the skill and science of Scottish trustees and surveyors, the turnpike roads of Scotland are unequalled by those of any other country. In 1829 there were 3666 miles open, and the number has been since largely increased.

National Character.—Scotchmen are characterised by many striking and well-marked peculiarities. In disposition they are grave, serious, and reflecting; in their habits frugal, industrious, and persevering; providence, honesty, and extreme caution are among their most distinguishing traits of character. They do not readily associate, and far less amalgamate, with foreigners, but will spare no amount of labour and self-denial to promote the welfare of their fellow-countrymen. They are eminently religious, deeply attached to the Presbyterian form of Church government, and strongly averse to Roman Catholicism. The annals of no other nation can show such a resolute determination in defence of civil and religious liberty. The Holy Scriptures are daily read in all the common schools, and the poorest peasant can generally read and understand them. The great and saving truths of the Bible are familiar to almost every one, and the divine code of moral law is observed by all classes of the community. The Lord's Day is universally a day of rest and religious observance; while life and property are safer than in any other country.

Literature.—Scotland, though far from being an opulent country,

and though her seats of learning are poorly endowed, has produced a cluster of names in all branches of science, philosophy, and art, that reflect on her the highest honour. The following are a few of her most eminent names:—POETRY: Ossian, Buchanan, Gawin Douglas, Drummond, Dunbar, Lyndsay, Ramsay, Tannahill, Macneill, Tennant, Hogg, Robert Burns, Thomson, Beattie, Scott, Campbell, Pollok, J. Montgomery, Prof. Wilson, Alexander Smith. HISTORY: Buchanan, Burnet, Hume, Robertson, Henry, Russell, Watson, Scott, Mackintosh, Alison, Carlyle. PHYSICAL SCIENCE: Napier, Ferguson, Gregory, Watt, Telford, Rennie, Playfair, Maclaurin, Leslie, J. Hutton, Black, Sir David Brewster, Robert Brown, Hugh Miller, John Fleming, Sir Charles Lyell, and Sir Roderick I. Murchison. MENTAL PHILOSOPHY: Reid, Hume, Kames, Stewart, Brown, Mackintosh, Adam Smith, and Sir W. Hamilton. THEOLOGY: Knox, Leighton, Burnet, Boston, Maclaurin, Macknight, Campbell, Gerard, Brown of Haddington, Halyburton, Witherspoon, M'Crie, and Thomas Chalmers. MEDICINE: Pitcairn, Munro, Gregory, Cullen, Abercrombie, W. Hunter, Baillie, Alison, Christison, A. Combe, Abernethy, J. Hunter, John Bell, Sir Charles Bell, Sir James Clark, Sir John Forbes, Liston, Lizars, Syme, Miller, and Sir James Y. Simpson. TRAVELS: Bruce, Park, Clapperton, Simpson, Sir J. Ross, Dr Livingstone, and Captain Grant. FINE ARTS: Wilkie, Nasmyth, Raeburn, Ramsay, Jameson, Sir J. N. Paton. MISCELLANEOUS: Ruddiman, Boswell, Smollett, Mackenzie, Adam, Blair, Jeffrey, Brougham, Prof. Wilson, Si W. Scott., C. P. Smyth.

IRELAND.

Position and Boundaries.—Ireland is the second largest island in the British archipelago. The Irish Sea, with its two inlets, the North Channel and St George's Channel, form its western boundary, separating it from Great Britain; while on the remaining three sides it is bounded by the Atlantic. Lying between lat. 51° 27′ and 55° 23′ N., and lon. 5° 26′ and 10° 28′ W., the mainland occupies nearly 4° of lat. and a little more than 5° of lon.

Form, Coast-Line, and Extreme Points.—The general form is a rhomboid, the longer diagonal of which, if produced, would pass through the most easterly point of Scotland (Buchanness). The four sides are formed by lines passing through Fair Head in Antrim, Erris Head in Mayo, Mizen Head in Cork, and Carnsore Point in Wexford. Properly speaking, these are the extreme points; but Malin Head, in Donegal, is the most northern point of the mainland; Mizen Head the most southern; Dunmore Head, in Kerry, the most western; and Halbert Point, on the coast of Down, the most eastern; greatest length, 306 m.—greatest breadth, 175 m. The coast-line, which is wavy and continuous on the E., but deeply indented on the W. and N. measures about 2200 miles, being

1 mile of coast to every 15 sq. m. of surface. The eastern coast is in general low and flat, and the navigation is obstructed by numerous sand-banks and sunken rocks, which are especially numerous between Fair Head and Dublin; but the coasts along the other sides are bold and rocky, and form a noble barrier against the waves of the Atlantic.

Area and Population.—The area, according to the late Ordnance Survey, is 32,512 sq. m., being nearly two-fifths of the size of Great Britain, and one-sixteenth larger than Scotland. The population in 1841 was 8,066,584, while in 1871 it only amounted to 5,402,759, showing a decrease in thirty years of 2,663,825, or nearly one-half its present population. It is nearly half as densely peopled as England, having 166 persons to each sq. m. The astonishing decrease during the last thirty years is mainly attributable to the famine of 1845-47, and to the immense tide of emigration that has subsequently taken place.

Political Divisions.—Ireland is divided into 4 provinces—viz., Ulster, Leinster, Munster, and Connaught; which are subdivided into 32 counties, as follows:—

ULSTER, IN THE N.E., HAS 9 COUNTIES.

Antrim.—BELFAST 174, Carrickfergus 9 (Belfast L.), Lisburn 7 (Lagan), Larne 3 (L. Larne), Ballymoney 3 n. (Bann), Ballymena 7 (Braid).

Towns from 1000 *to* 2500:—Antrim, Ballycastle, Bushmills, Legoniel, Portrush.

Down.—DOWNPATRICK 4 n., Newton-Ards 10 (L. Strangford), Newry 11 (Newry), Donaghadee 3 (E. coast), Bangor 3 (Belfast L.), Dromore 3 (Lagan), Gilford 3, Banbridge 4 (Bann).

Comber, Ballynahinch, Portaferry, Warren-Point, Rathfryland, Hillsborough, Hollywood.

Armagh.—ARMAGH 9 (Callan), Lurgan 8 n., Portadown 6 n. (Bann).

Keady, Tanderagee, Market-Hill, Newtown-Hamilton.

Monaghan.—MONAGHAN 4 (Ulster Canal).

Castle Blaney, Ballybay, Carrickmacross, Clones.

Cavan.—CAVAN 3 n. (Erne).

Kingscourt, Bailieborough, Belturbet, Cootehill.

Fermanagh.—ENNISKILLEN 6 (Erne).

Donegal.—LIFFORD 1 (Foyle), Ballyshannon 3 (Erne).

Killybegs, Raphoe, Rathmelton, Letterkenny, Donegal.

Londonderry.—LONDONDERRY 25 (Foyle), Coleraine 6 (Bann), Newtown-Limavady 3 (Roe).

Magherafelt, Maghera.

Tyrone.—OMAGH 3, Strabane 4 (Mourne), Cookstown 4 (Ballinderry), Dungannon 4 n. (Blackwater).

Newtown-Stewart, Fintona, Aughnaclcy.

LEINSTER, IN THE S.E., 12 COUNTIES.

Louth.—DUNDALK 10 (Castleton), Ardee 3 (Dee), Drogheda, partly in Meath, 14 (Boyne).

Meath.—TRIM 2, Navan 4 (Boyne), Kells 3 (Blackwater).

Dublin.—DUBLIN 246 (Liffey), Blackrock 3, Donnybrook 2 n., Kingstown 12 (Dublin Bay).

Sandymount, Skerries, Swords, Rush, Balbriggan, Chapelizod.

Wicklow.—WICKLOW 3 (Vartry), Arklow 5 (Avoca), Bray 4 (Bray).

Rathdrum, Baltinglass.

Wexford.—WEXFORD 12, Enniscorthy 5 (Slaney), New Ross 7 (Barrow).

Newtown-Barry, Gorey.

Kilkenny.—KILKENNY 13 (Nore).

Thomastown, Urlingford, Castle Comer, Callan.

Queen's County.—MARYBOROUGH 3 n., Mount Mellick 3 (Barrow).

Portarlington, Abbeyleix, Mountwrath, Stradbally.

King's County.—TULLAMORE 5 n. (Cloddagh), Birr or Parsonstown 5 (Lower Brosna).

Banagher, Edenderry.

West Meath.—MULLINGAR 5 (Brosna), Athlone 6 (Shannon).

Kilbeggan, Castlepollard, Moate.

Longford.—LONGFORD 5 (Camlin).

Ballymahon, Granard.

Kildare.—ATHY 4 (Barrow), Naas 3 n. (Liffey).

Monastereven, Celbridge, Kildare, Maynooth.

Carlow.—CARLOW 8 (Barrow).

Leighlin, Tullow, Bagenalstown.

MUNSTER, IN THE S.W., 6 COUNTIES.

Waterford.—WATERFORD 23, Portlaw 4 n. (Suir), Dungarvan 6 (Dungarvan B.)

Cappoquin, Lismore, Tallow, Tramore.

Cork.—CORK 79, Macroom 3 (Lee), Queenstown 9, Middletown 3 (Cork Harb.), Skibbereen 4 (Ilen), Clonakilty 3 (Clonakilty Bay), Kinsale 4 (Kinsale Harb.), Bandon 6 (Bandon), Youghal 6, Fermoy 6, Mallow 4 (Blackwater), Mitchelstown 3 (Funcheon).

Cloyne, Bantry, Dunmanway, Millstreet, Doneraile, Buttevant, Kanturk, Charleville, W. Passage.

Kerry.—TRALEE 10 (Lee), Dingle 2 (Dingle Bay), Killarney 5 (L. Killarney).

Listowel, Cahirciveen, Castle Island, Kenmare.

Clare.—ENNIS 7 (Fergus), Kilrush 5 (Shannon).

Killaloe, Kilkee.

Tipperary.—CLONMEL 9, Carrick-on-Suir 5, Cahir 3, Cashel 4, Thurles 5 (Suir), Tipperary 6 (Arra), Nenagh 6 (Nenagh), Roscrea 4 (Lower Brosna).

Killenaule, Clogheen, Borrisocane, Fethard.

Limerick.—LIMERICK 40 (Shannon), Rathkeale 3 (Deal).

Askeaton, Croom, Kilmallock, Bruff, Newcastle.

CONNAUGHT, IN THE W., 5 COUNTIES.

Galway.—GALWAY 13 (Corrib), Tuam 5 (Clare), Loughrea 3 (L. Rea), Ballinasloe 3 (Suck).

Clifden, Athenry, Portumna, Aghrim, Gort.

Mayo.—CASTLEBAR 3 (Castlebar), Ballina 5 (Moy), Westport 4 (Clew Bay), Ballinrobe 3 (Robe).

Crossmolina, Killala, Ballaghaderreen.

Sligo.—SLIGO 10 (Garvogue).

Leitrim.—CARRICK-ON-SHANNON 2 (Shannon).

Manor-Hamilton.

Roscommon.—ROSCOMMON 3 (Suck), Boyle 3 (Boyle Water).

Castlereagh, Elphin.

Descriptive Notes.—According to the census of 1871, there were in Ireland two towns with a population above 100,000—viz., Dublin and Belfast; between 100,000 and 50,000 only one—Cork; twelve between 20,000 and 10,000—Waterford, Sligo, Galway, Drogheda, Kilkenny, Clonmell, Newry, Wexford, Newtown-Ards, Dundalk, Tralee, and Kingstown; and twenty-six between 10,000 and 5000.

ULSTER occupies the entire N. and N.E. of Ireland, and is the province nearest to Scotland, from which, at one point (Fair Head) it is only 13 miles distant. It is the most populous, and by far the most important, of the four provinces into which the kingdom is divided; area, 8555 sq. m.; population, 1,830,398. It is deeply indented by arms of the sea on the three sides exposed to the ocean, the principal indentations being Lough Strangford, Belfast Lough, Lough Foyle, Lough Swilly, and Donegal Bay. Each of these forms the estuary of a more or less extensive river-basin. The principal fresh-water lakes are Loughs Neagh and Erne. Geological character: Metamorphic rocks in the N., which are flanked with granite on the west side, and with an immense tract of trap on the east; Lower Silurian in the S.E.; carboniferous limestone in the S.W.; and Devonian in the centre. The shores are bold and rocky, with remarkable basaltic cliffs in the N. and E., the most celebrated of which is the Giant's Causeway, in the north of Antrim. Surface greatly diversified, but freer from bogs and plains than any of the other provinces of Ireland; mountainous in the W. and E.; soil fertile, upwards of three-fifths under cultivation. Ulster is the principal seat of the Irish linen manufacture, and of other branches of industry. The annual value of the linen exported is estimated at £5,000,000 sterling. The principal min-

eral products are coal, iron, copper, lead, and limestone, which are found chiefly in Cavan. The Protestant religion prevails, education is well attended to, and the people enjoy considerable comfort as compared with the other provinces. **Belfast**, generally regarded as the capital of Ulster, is the second city in Ireland in point of population, and greatly exceeds Dublin in manufacturing industry, especially in the linen and cotton manufacture. It has considerable foreign trade, and extensive intercourse with the west coast of Great Britain, especially with Liverpool and Glasgow, and is the seat of one of the "Queen's Colleges." **Carrickfergus**, with cotton and linen manufactories, and near it an extensive salt-mine discovered in 1852. **Lisburn**, a handsome and populous town; a canal from Lough Neagh here joins the Lagan. **Ballymena**, in the centre of an industrious, manufacturing, and agricultural district, is an active and thriving town. **Downpatrick**, the capital, is one of the most ancient towns in Ireland; its holy wells are resorted to by Roman Catholic pilgrims. **Newry**, the largest town in the county, is a flourishing seaport, with considerable linen and cotton works. **Armagh**, the ecclesiastical capital of Ireland, with an observatory and two cathedrals. **Lurgan** and **Portadown**, with manufactories of linen and cotton goods. **Monaghan**, on the Ulster Canal, which unites Loughs Neagh and Erne, trades extensively in linen and pigs. **Cavan**, the head of a poor-law union, has some local traffic. **Enniskillen**, delightfully situated in an island in L. Erne, carries on a considerable trade in linen; in its town-hall are still preserved the banners borne by the Enniskilleners at the celebrated battle of the Boyne, July 1, 1690. **Ballyshannon**, near the mouth of the Erne, with a salmon-fishery. **Londonderry**, an ancient, flourishing, and walled city on the Foyle, famous for the siege so heroically sustained against the army of James II. in 1689. **Coleraine** is one of the principal markets for the Ulster linen manufactures. **Omagh**, a small town with trade in linen and corn. **Dungannon**, the ancient residence of the kings of Ulster, has a brisk linen trade.

LEINSTER occupies the entire S.E. of Ireland; area, 7472 sq. m.; population, 1,335,966 The shores are less indented than in Ulster, the principal inlets being Dundalk and Dublin Bays and Wexford Haven: the principal rivers are the Dee, Boyne, Liffey, Slaney, and Barrow: the basins of the Shannon and Suir also belong partially to this province. By far the largest portion is covered with mountain limestone, but there are considerable tracts of Lower Silurian along the east coast, enclosing a huge belt of granite, which extends in a S.W. direction from Dublin Bay to the junction of the Barrow and Nore. Surface generally level, but one mountain region in the E. and another in the W.; soil fertile and well cultivated, and producing more wheat than any other province: possesses superior facilities for internal communication by means of its large rivers; but has fewer good harbours than any of the other provinces. At the time of the Anglo-Norman invasion the province was divided into two petty sovereignties—viz., those of Leinster and Meath. **Dundalk**, at the head of a bay of same name, has various manufactures and important fisheries. **Drogheda**, a flourishing town on the Boyne, and near the scene of the celebrated battle of that name, which proved so fatal to the pretensions of the Stewarts in Ireland. **Trim**, a small town on the Boyne: near it Dangan, said by some to be the birthplace of the late Duke of Wellington. **Navan**, with a good export trade in agricultural produce. **Dublin**, the capital of Ireland and one of the finest cities of Europe, has a quarter of a million inhabitants, and numerous magnificent public buildings, among which is Trinity College, a Protestant university

founded in 1591 by Queen Elizabeth. Adjoining the city is Phœnix Park, containing the residence of the Lord-Lieutenant, her Majesty's representative in Ireland. **Kingstown**, the port of Dublin, with an excellent harbour and extensive commerce, is the mail-packet station to Liverpool and Holyhead. **Wicklow**, a resort of sea-bathers, exports copper-ore and corn. **Wexford**, a considerable town, with exports of cattle and dairy produce, has extensive quays and dockyards. **Enniscorthy**; near it is Vinegar Hill, where the Irish rebels were defeated by Lord Lake in 1798. **New Ross**, a flourishing town, with considerable export trade in agricultural produce. **Kilkenny**, a considerable town, the second in population in the province; the streets are paved with black marble, which is quarried in the vicinity; here is a grammar school, in which Swift, Congreve, and Berkeley received the early part of their education. **Maryborough** consists for the most part of miserable cabins, with a few fine houses. **Tullamore**, the principal shipping station on the Grand Canal. **Birr**, a thriving town, famous for Lord Rosse's monster telescope, one of the greatest achievements of modern science. **Mullingar**, on the Royal Canal, is noted for its great cattle and wool markets. **Athlone**, the principal military station in the west of Ireland, has considerable local trade. **Longford**, on the Camlin, a busy, thriving little town; near it was born Oliver Goldsmith in 1728. **Athy**, on the Barrow, has considerable trade in corn, butter, and malt. **Maynooth**, with a far-famed Roman Catholic college. **Carlow**, with a Roman Catholic cathedral and college, has considerable trade in agricultural produce.

Munster is situated in the S.W. of Ireland, and is the largest of the four provinces; area, 9474 sq. m.; population, 1,390,402. The coasts are very deeply indented on the W. by the estuary of the Shannon, Dingle Bay, Kenmare River, and Bantry Bay. The principal river-basins are those of the Suir, which enters Waterford Harbour; the Blackwater; the Lee, which enters Cork Harbour; the Bandon, which enters Kinsale Harbour (all of which incline to the S.E.); and the Shannon basin in the N.W., only partially in this province. It consists of mountain limestone and millstone-grit in the W., Devonian strata in the S., and Upper Silurian in S.W. Surface highly diversified; two ranges of mountains, the southernmost of which contains the loftiest summits in the kingdom, extend nearly across the province from E. to W., enclosing the basin of the Blackwater: the extensive plain of Tipperary, Limerick, and Cork, occupies a large portion of the surface. Soil various, two-thirds being arable, and a great portion under bog, which is easily reclaimed. Coal is found in Tipperary, Kerry, and Cork; but there are few minerals exported, though the harbours are excellent. The population belongs almost exclusively to the Roman Catholic Church. At the time of the Anglo-Norman conquest, the province was divided into the two petty kingdoms of North and South Munster. **Waterford**, a large and thriving city on the right bank of the Suir, has a great foreign and coasting trade, the exports alone being valued at £4,000,000 annually. **Cork**, built on an island in the Lee, is the principal city in Munster, and in population is only exceeded by Dublin and Belfast. Cork is the seat of one of the recently erected Queen's Colleges. In 1868, 3630 vessels, carrying 839,220 tons, entered and cleared. Its manufactures are numerous, and shipbuilding is extensively carried on. **Queenstown**, formerly **Cove of Cork**, derived its present name from the visit of Queen Victoria in 1849: is protected by batteries and fortifications. **Kinsale**, a fashionable watering-place, with valuable fisheries. **Youghal**, on the Blackwater, with valuable salmon-fisheries: here Sir Walter Raleigh first introduced the culture of the

potato. **Fermoy**, with infantry barracks and flour-mills. **Tralee**, near the head of Tralee Bay, is the seat of a brisk trade in grain and flour. **Dingle**, the westernmost town in the British Isles. **Killarney**, on a lake of same name, famous for its enchanting scenery, and now accessible by rail from Dublin, is a favourite resort for tourists. **Ennis**, with a Gothic abbey, which is reckoned the finest in Ireland, has quarries of fine black marble in the neighbourhood. **Clonmel**, partly in Waterford, a considerable town with extensive manufactures, is the b. p. of Sterne, author of 'Tristram Shandy.' **Carrick-on-Suir**, with a bridge of twenty arches over the river, and an export trade in corn and cotton. **Cashel**, once the capital of the kingdom of Munster, is an ancient episcopal city, with Cormac's Chapel standing on the celebrated "Rock of Cashel," and one of the most remarkable ruins in Ireland. **Thurles** contains a Roman Catholic college and two episcopal palaces. **Tipperary**, on the Waterford and Limerick Railway, is beautifully situated, and is a well-built and thriving town. **Nenagh**, a thriving town, with a good local trade. **Limerick**, a large and populous city on the Shannon, at the head of its noble estuary, is a place of great antiquity, and the fourth largest city in Ireland; was a royal seat of the kings of Thomond before the conquest of Ireland. At the time of the Revolution it was the chief stronghold of the cause of James II., but capitulated to the troops of William III. in 1691; has railway communication with all parts of the kingdom, with great export and import trade, and considerable manufactures of beautiful lace.

CONNAUGHT, the smallest, least populous, and most westerly of the Irish provinces, lies N. of Munster and W. of Leinster, from which it is for the most part separated by the Shannon; area, 6862 sq. m.; population, 845,998. The west side is broken up into numerous peninsulas, the largest of which is Connemara, and is lined by a great many islands. The principal indentations are Galway, Clew, Blacksod, Killala, and Sligo Bays; and the chief river-basins are those of the Shannon (in part), Corrib, Moy, and Arrow. Principally mountain limestone; but a large tract of metamorphic and Silurian strata in the W., and extensive patches of Devonian in various parts. Surface mountainous in the W., and hilly in the N. and S., while the centre consists of an extensive level plain. Soil various, moderately fertile, full of peat-bogs, but nearly a half is arable. Minerals and manufactures unimportant: but coal is found in the Lough Allan district. The inhabitants belong for the most part to the native Irish or Celtic stock, retain their ancient language, adhere to the Roman Catholic religion, and are sunk in the deepest poverty and ignorance. Connaught was formerly one of the kingdoms of the Irish heptarchy, and remained unconquered long after the rest of Ireland had yielded to the English arms. **Galway**, at the head of Galway Bay, may be regarded as the capital of Connaught, it being the only important town in the province, and the chief seaport of the west of Ireland. It is 105 miles west from Dublin, with which it is connected by railway. Galway is very ancient; was conquered by the Anglo-Normans in 1230; had a flourishing trade with Spain in the middle ages, and many of the houses are erected after the Spanish model. It is the seat of one of the Queen's Colleges. **Tuam**, an episcopal city, with a Roman Catholic college, named St Jarlath, is the see of the primate of Connaught. **Ballinasloe** has a large annual fair, which lasts five days. **Castlebar**, a small inland town, has some trade in linen. **Ballina**, with manufactures of snuff, and salmon-fisheries. **Sligo**, a considerable town on the Garvogue, has a good colonial and foreign trade. Three ships of the Spanish Armada were stranded here in 1588. **Carrick-on-Shannon**, at the confluence of the

Shannon and Boyle, is a very small town, with little trade. **Roscommon**, on a tributary of the Shannon, has some woollen manufactures, and an increasing corn trade.

Capes.—Beginning at the extreme N., and proceeding E.-ward, the principal capes and headlands are the following:—Malin Head, in Donegal, the N.-most point of the mainland; Bangore Head and Fair Head, in Antrim;* Howth Head, in Dublin; Wicklow Head, in Wicklow; Carnsore Point, in Wexford; Cape Clear, on an island, the most southern point of Ireland; Mizen Head and Crow Head, in Cork; Dunmore Head, in Kerry, the most westerly point of the mainland; Kerry Head and Loop Head, on either side of the estuary of the Shannon; Slyne Head, in Galway; Achil Head and Urris Head, in Mayo; Rossan Point and Bloody Foreland, in Donegal.

Islands.—The islands are in general very small, and close to the mainland.† Following the same order as in the last paragraph, we have:—Rathlin, N. of Antrim; Copeland, N.E. of Down; Lambay and Ireland's Eye, E. of Dublin; Saltee I., S. of Wexford; Cove, in Cork Harbour; Cape Clear and Bear Is., S.W. of Cork; Valentia‡ and Blasket Is., W. of Kerry; Arran Is., in Galway Bay; Garomna, and several others, S. of Galway; Innis Bofin, Innis Turk, Clare, and Achil Is., W. of Connaught; Arranmore and Tory Is., W. of Donegal.

Bays and Estuaries.—These are very numerous, especially in the N. and W., where they penetrate far into the land. On the coast of Ulster these inlets are termed *loughs*, a word of the same sound and signification as the *lochs* of the opposite coasts of Scotland. Beginning at the N., and following the coast-line E.-wards, the following are the principal bays, &c.:—

Coast of Ulster.—Loughs Swilly, Foyle, Belfast, Strangford; Dundrum B., Carlingford B. *Coast of Leinster.*—Dundalk B., Dublin B., Wexford Harbour. *South Coast of Munster.*—Waterford, Dungarvan, Youghal, Cork, and Kinsale Harbours. *West Coast of Munster.*—Bantry B., Kenmare River, Dingle B., Tralee B., Estuary of the Shannon. *Coast of Connaught.*—Galway B., Clew B., Blacksod B., Killala B., Sligo B., and Donegal B., between Connaught and Ulster.

Mountain System.—The Irish mountains form an immense circular ring along the coast, enclosing the great central basin of the kingdom. This plain extends from Dublin to Galway, and from the shores of Lough Neagh to Waterford: its highest elevation is about 320 feet; it comprises a large tract of bog-land, and is traversed by only a few low ranges of hills. The ranges separating the central

* Fair Head is only 13 miles distant from the Mull of Cantyre, in Scotland. A little to the west of Bangore Head is the celebrated Giant's Causeway, a basaltic promontory projecting into the sea, resembling a pier, 700 feet in length, 350 feet in breadth, and 80 feet in height. It is separated by trap-dykes into three divisions, comprising in all about 40,000 polygonal columns, each consisting of several pieces, the joints of which are articulated with the greatest nicety.

† Altogether 5000 islands and rocks are enumerated as belonging to Ireland, of which 245 were found inhabited at the date of the last census.

‡ Valentia Island is the eastern terminus of the great submarine telegraph to Newfoundland.

plain from the ocean are not continuous, but broken up into a number of isolated masses, none of which attain to any great elevation—Carran Tual, in Macgillicuddy Reeks, county Kerry, the culminating-point of Ireland, being 3414 feet high. Beginning at the S.E. corner of Ulster, and proceeding N. and W., the following are the principal ranges :—

Mourne Mountains, in Down, between the Newry and Lagan; highest summits—Slieve-Donard, 2796; Mt. Eagle, 2084 feet.

Glenocum Mountains, in Antrim, separating the basins of the Lagan and Bann, and extending from Belfast to Fair Head; Mt. Trostan, 1817; Mt. Devis, 1568 feet.

Carntogher Mountains, in Londonderry, between the Bann and the Foyle; Mt. Sawell, 2236 feet.

Mountains of Donegal, between the Foyle and the Atlantic; Mt. Errigal, 2466 feet; Blue Stack, 2219 feet.

Nephin-Beg Mountains, in Mayo, between the basin of the Moy and west coast; Mt. Nephin, 2646 feet; Nephin-Beg, 2065 feet.

Mountains of Connemara, south of Clew Bay, and between the basin of the Corrib and west coast; Muilrea, 2683; Croagh Patrick, 2510; Twelve Pins, 2395 feet.

Mountains of Clare, between Galway Bay and Estuary of the Shannon; Mt. Callan, Slieve-Boughty.

Mount Brandon, 3127 feet—the second highest mountain in Ireland—between basin of Shannon and Dingle Bay.

Macgillicuddy Reeks, in Kerry, between Dingle Bay and Kenmare River; Carran Tual, W. of Lake Killarney—the highest mountain in Ireland—3414 feet; Mangerton, S.E. of Lake Killarney, 2756 feet.

The *Muskerry, Boggagh, and Neagh Mountains*, in Cork, between the basins of the Blackwater and the Lee.

Mountains of Tipperary and Waterford, between the basins of the Blackwater and the Suir; Galteemore, 3007; Knockmelledown, 2598.

Blackstairs Mountains, in Wexford, between the basins of the Barrow and the Slaney; Mt. Leinster, 2610 feet.

Mountains of Wicklow, between the Slaney and Liffey; Lugnaquilla, 3039; Kippure 2473 feet.

Slieve-Bloom Mountains, in the interior of the Great Plain, separate the basin of the Shannon from that of the Barrow and Suir; Mt. Keeper, 2278 feet.

The line of perennial congelation in the latitude of Carran Tual is about 6000 feet high. Hence, if Mangerton were piled atop of the loftiest mountain in Ireland, it would be capped with snow all the year round.

River-Basins.—The principal axis of Ireland extends in a N.E. direction from Mizen Head, in Cork, to Fair Head, in Antrim. The twelve principal river-basins are equally divided by this line, six of them (Shannon, Corrib, Moy, Erne, Foyle, and Bann) inclining from it in a general westerly direction towards the Atlantic, and the remaining six (Boyne, Liffey, Slaney, Barrow, Blackwater, Lee) in a general easterly direction towards the Irish Sea and the openings leading into it. The twelve basins contain twenty-six out of the thirty-two county towns, and occupy about $\frac{4}{5}$ of the entire surface. The five largest basins are the Shannon (area, 7000 sq. m.), Erne, Foyle,

Bann, Barrow, and Suir; they contain twenty county towns and 16,300 square miles, or one-half of the entire surface.

Table of Rivers and Towns.—The arrangement adopted in the following table is the same as in the corresponding sections treating of England and Scotland: we begin with the river on which the capital stands, and proceed northwards along the coast—that being the direction followed in the river-system of Great Britain. Large towns are printed in Roman letters, and denote here such as contain 2500 inhabitants and upwards; small towns, or those printed in *Italics*, denote those containing not less than 1000 inhabitants; while county towns are in SMALL CAPITALS. Ninety rivers are given in the table, and of these 30 enter the ocean directly, the other 60 being their tributaries; and 230 towns, only 100 of which have a population amounting to 2500, all the others ranging between that number and 1000.

Basins inclined to the Irish Sea.

Rivers.	*Towns.*
Liffey & Dublin B.,	Kingstown, *Blackrock, Donnybrook*, n., *Sandymount*, DUBLIN, *Chapelizod, Celbridge*, Naas, *Kildare*, n.
Rye, *l*	*Maynooth.*
Co. of Dublin,	*Swords, Rush, Skerries, Balbriggan.*
Boyne,	Drogheda, Navan, TRIM, *Edinderry.*
Blackwater, *l*	Navan, Kells.
Moynalty, *l*	*Bailieborough.*
Dee,	Ardee.
Glyde,	*Carrickmacross, Kingscourt*, n.
Castleton,	DUNDALK.
Carlingford B. and Newry,	*Carlingford, Warren Point*, Newry, *Rathfryland.*
L. Strangford & R. Quoile,	*Portaferry, Comber*, Newtown-Ards, DOWNPATRICK, *Ballynahinch.*
Co. of Down,	Donaghadee.
L. Belfast and R. Lagan,	Bangor, Carrickfergus, *Holywood*, BELFAST, Lisburn, *Hillsborough*, Dromore.
L. Larne,	Larne.

Basins inclined to the Atlantic.

Ballycastle B.,	*Ballycastle.*
Bush,	*Bushmills.*
N. coast,	*Portrush.*
Bann, and L. Neagh,	Coleraine, Ballymoney, n., Antrim, Lurgan, n., Portadown, *Tanderagee*, Gilford, Banbridge.
Moyola, *l*	*Magherafelt, Maghera.*
Main,	*Randalstown.*
Braid, *l*	Ballymena.
Ballinderry, *l*	Cookstown.
Blackwater,	Dungannon, n., *Auchnacloy.*
Callan,	ARMAGH, *Keady*, n.
Ulster Canal,	MONAGHAN.
Foyle (L. Foyle),	LONDONDERRY, LIFFORD, Strabane.
Roe,	Newtown-Limavady.
Deel, *l*	*Raphoe.*
Mourne,	Strabane, *Newtown-Stewart*, OMAGH, *Fintona*, n.
Swilly, L. and R.,	*Rathmelton, Letterkenny.*
Donegal B. & R. Erne,	*Killybegs, Donegal*, Ballyshannon, ENNISKILLEN, *Belturbet*, CAVAN, n.
Wattle,	*Clones*, n.
Annalee,	*Cootehill*, n.
Garvogue and Bonnet,	SLIGO, *Manor-Hamilton.*
Moy,	*Killala*, Ballina.
Deel, *l*	*Crossmolina.*
Clew Bay,	Castlebar, CASTLEBAR.
W. Co. of Galway,	Westport.
Corrib (Galway Bay),	*Cliffden.*
Clare, *l*	GALWAY.
Robe, *l*	Tuam.
Clarin,	Ballinrobe.
Cooter,	*Athenry.*
	Gort, Loughrea, n.

Basins inclined to the Atlantic (continued).

Rivers.	*Towns.*
Shannon (L. Allen),	*Kilkee*, Kilrush, LIMERICK, *Killaloe*, *Borrisocane*, *Portumna*, *Banagher*, Athlone, CARRICK-on-Shannon.
Fergus,	ENNIS.
Deel, *l*	*Askeaton*, Rathkeale, *Newcastle*.
Maig & Laba, *l*	Loo-*Croom*, Charleville, *Kilmallock*, *Kilfinnan*.
Star,	*Bruff*.
Nenagh, *l*	Nenagh.
Lower Bros-Birr, Roscrea. na, *l*	
Brosna, *l*	Moate, MULLINGAR.
Cloddagh, *l*	TULLAMORE.
Suck,	Ballinasloe, ROSCOMMON, *Castlereagh*.
Inny, *l*	*Ballymahon*, *Granard*, n.
Camlin, *l*	LONGFORD.
Bodarg,	*Elphin*.
Boyle (L. Gara),	CARRICK-on-Shannon, Boyle.
Feale,	*Listowel*, *Abbeyfeale*.
Tralee Bay,	TRALEE.
Dingle Bay & Main R.,	Dingle, *Cahirciveen*, *Castlemain*, *Castle I.*
Leane, *l*	Killarney.
Kenmare Riv.,	*Kenmare*.
Bantry Bay,	Bantry.

Basins inclined to the Irish Sea (continued).

Ilen,	Skibbereen.
Clonakilty B.,	Clonakilty.
Bandon,	Kinsale, Bandon, *Dunmanway*.
Cork H. and R. Lee,	Queenstown *Cloyne*, n., Middleton, n., *W. Passage*, CORK, Macroom, n.
Sullane, *l*	Macroom.
Blackwater,	Youghal, *Cappoquin*, *Lismore*, Fermoy, Mallow, *Millstreet*.
Bride,	*Tallow*.
Funcheon, *l*	Mitchelstown.
Awbeg, *l*	Doneraile, *Buttevant*.
Allow, *l*	*Kanturk*.
Dungarvan B.,	Dungarvan.
Tramore Bay,	*Tramore*.
Suir,	WATERFORD, Portlaw, n., Carrick-on-Suir, CLONMEL, Cahir, Cashel, Thurles, Templemore, n.
Honor, *l*	*Fethard*, *Killenaule*, n.
Tar,	*Clogheen*.
Arra,	Tipperary.
Barrow,	New Ross, *Leighlin Bridge*, CARLOW, ATHY, *Monasterevan*, *Kildare*, n., *Portarlington*, MARYBOROUGH, Mount Mellick.
Nore,	*Thomastown*, KILKENNY, *Abbeyleix*, *Mountrath*.
King's R.,	*Callan*, *Urlingford*.
Dinan, *l*	*Castle Comer*.
Strad,	*Stradbally*.
Figale, *l*	*Monastereven*.
Slaney,	WEXFORD, Enniscorthy, *Newtown-Barry*, *Tullow*, *Baltinglass*.
Bann,	*Gorey*.
Avoca,	Arklow, *Rathdrum*.
Vartry,	WICKLOW.
Bray,	Bray.

Lakes.—The Irish lakes or *loughs* are numerous, and some of them extensive. Lough Neagh, in Ulster, is the largest in the British Isles: it is 17 miles long, 10 broad, and has an area of 153 sq. miles: its waters are celebrated for their petrifying quality. The other principal lakes are Corrib, Erne, Derg, Ree, Mask. The total area of all the Irish lakes is estimated at 984 sq. miles. All the important lakes are found in the principal river-basins enumerated at p. 170. Following the order there given, we find in the basin of the

Shannon—*Loughs Derg*, *Ree*, *Boffin*, *Corry*, and *Allen*, in the line of the main river; *Loughs Ennel* and *Owel* on the Brosna; *Loughs Derveragh* and *Sheelin* on the Inny; and *Loughs Key* and *Gara* on the Boyle. Corrib—*Loughs Corrib* and *Mask*. Moy—*Loughs Conn* and *Cullin*. Erne—*Loughs Erne*, *Oughter*, and *Gounagh*. Foyle—*Lough Derg*, containing

St Patrick's Purgatory on an island. Bann—*Lough Neagh*, largest in the United Kingdom. Boyne—*Lough Ramor*. Dingle and Main Basin—*Lakes of Killarney*, in Kerry, drained by the Leane, and, being surrounded by the loftiest mountains in Ireland, are celebrated for their romantic scenery.

Internal Communication.—Owing to the absence of mountain-chains in the interior, and the many deep indentations of the coast, Ireland possesses great natural facilities for carrying on her internal communication; but until recently, little has been done in opening up the country by the construction of the highways of commerce.

RAILWAYS.—In January 1871 there were 1972 miles open for traffic, which cost £24,891,000; and the total receipts for passengers and goods for the year then ending were £1,500,000. The railway system is still far from being complete. Dublin is the centre of the greater part of them.

NAVIGABLE RIVERS.—The Shannon is navigable from the sea to L. Allen, a distance of 214 miles; the Bandon, 15; the Blackwater to Fermoy; the Suir to Clonmel, 40; the Barrow to Athy, 60; the Nore to Thomastown, 28; the Slaney to Enniscorthy, 15; the Boyne to Navan, 25; the Lagan to Lisburn; the Bann to Coleraine, 5; the Foyle to Strabane, 20; Erne to Ballyshannon, 5.

CANALS.—The mileage of canal amounts to 357 miles. The Grand Canal, from Dublin to Banagher on the Shannon, connects the Irish Sea with the Atlantic, 164 miles. Royal Canal, from Dublin to a point in the Shannon a little above Lough Rea, 92 miles. Newry Canal unites the river Newry with the Upper Bann, thus connecting Carlingford Bay with Lough Neagh, 12 miles. Lagan Canal, from Belfast to Lough Neagh, 20 miles. Ulster Canal, from Charlemont on the Blackwater, a feeder of the Upper Bann, to Lough Erne, by Monaghan and Clones, 46 miles. Boyne Canal, from Drogheda to Navan, 25 miles.

ELECTRIC TELEGRAPH.—Four lines of submarine telegraph connect Ireland with Great Britain (Holyhead to Dublin; Milford Haven to Wexford; Stranraer to Carrickfergus; Portpatrick to Donaghadee). Electric wires are also laid in connection with all the principal railway lines. In 1858 the first submarine telegraph, connecting the Old World with the New, was completed. The eastern terminus of the telegraph is in Valentia Harbour, county Kerry, and the western at Heart's Content, Trinity Bay, Newfoundland. It continued in working order, however, for only a few months, and is now abandoned. Another cable, between the same termini, was laid in 1865, and a third in 1866, both of which are now in excellent order.

National Character.—The native Irish belong to the Celtic race, and are characterised by all the peculiarities which distinguish it from the other branches of the Caucasian family, some of which they exhibit in an extreme degree. They are remarkable for quickness and intelligence, but the brilliancy of their imagination and their unrivalled wit are more striking than their depth of thought or power of patient investigation. Their wit is so peculiar and *sui generis*, that it is quite inimitable by all save the natives of the Emerald Isle. They are singularly warm-hearted and hospitable, and, when well educated and refined, form the most agreeable asso-

ciates. Their prevailing vices are rashness, improvidence, and a disposition to riotous excitement; and, when under the influence of spirituous liquors, they are frequently regardless of human life. They have always manifested a strong aversion to English rule, and have had too many causes for evincing a spirit of insubordination: but a better day is beginning to dawn over this unfortunate though beautiful country.

Literature.—Ireland could boast of a written literature long before the sister island. Not a few Irish MSS. still extant are supposed to have been written as early as the sixth century. The famous Psalter of Cashel, though not compiled till the ninth century, contains many compositions of a much older date; and the same remark holds true in regard to the valuable collection of ancient Irish records made by Tighernach and other annalists in the eleventh and twelfth centuries. These were printed and published by the Rev. Charles O'Connor in 1814-26, both in the original and with a Latin translation. The largest known collections of Irish MSS. are those in the library of Trinity College, Dublin, and those formerly in that of the Duke of Buckingham, at Stowe. Of the few works that have appeared in Irish, in recent times, are Keating's 'Chronological History of Ireland,' and the translation of the Bible, executed in 1681. As the Irish language was rarely studied by scholars of other countries, learned Irishmen generally wrote in the Latin tongue in early times, and in English at a subsequent period. Among the latter may be mentioned the following:—POETRY: Dean Swift, Oliver Goldsmith, J. Barry, Wolfe, Moore. HISTORY: Keating, Leland, O'Hallaran. MENTAL AND MORAL SCIENCE: Bp. Berkeley, Hutcheson. THEOLOGY: Archbp. Usher, Dr Adam Clarke, W. B. Kirwan, Archbp. Magee. NATURAL SCIENCE: Sir Hans Sloane, Sir W. R. Hamilton, R. Kirwan, Goldsmith, Sir D. Barry, R. Murphy, Lord Rosse. ORATORS AND STATESMEN: Canning, Sheridan, Burke, Grattan, Curran, Daniel O'Connel, Lord Macartney, Lord Plunket. NOVELISTS AND DRAMATISTS: Sir R. Steele, Sterne, O'Hara, Griffin, Arthur Murphy, O'Keeffe, Carleton, Knowles, Lever. FINE ARTS: Lover, M. Kelly, Sir J. A. Stevenson. TRAVELS: R. O'Hara, Burke, Maclure, M'Clintock. MISCELLANEOUS: S. Barry, Malone, E. Quin, Maginn, J. W. Croker, J C. Croker.

SPAIN AND PORTUGAL.

Position and Boundaries.—Spain and Portugal, otherwise called the Iberian or Spanish Peninsula, occupies the extreme S.W. corner of Europe. It is bounded on the N. by the Pyrenees and the Bay of Biscay, which separate it from

France; on the W. by the Atlantic; and on the S. and E. partly by the Atlantic and partly by the Mediterranean and Strait of Gibraltar, which separate it from Africa. The Peninsula lies between the parallels of 36° 1′ and 43° 45′ N., and between the meridians of 9° 32′ W. and 3° 20′ E.; thus occupying 7¾° of latitude and nearly 13° of longitude. Madrid, near the centre of the Peninsula, is nearly on the same parallel as Naples, Bokhara, Pekin, Great Salt-Lake City, and New York, and nearly on the same meridian as Edinburgh, Exeter, L'Orient, Ivory Coast, and St Helena.

Form, Coast-Line, and Extreme Points.—Except for a considerable prolongation in the extreme N.E., the form of the Peninsula is nearly a square, whose longest diagonal, from Cape St Vincent to Cape Creuse, measures 650 miles; and the shortest, from Cape Ortegal to Cape de Gata, 525 miles. The extreme points are—Cape Roca, near Lisbon, the most westerly point of the continent, and Tarifa Point, near Gibraltar, the most southerly; Cape Ortegal in Galicia and Cape Creuse in Catalonia are the extreme N. and E. points. Surrounded by the ocean on all sides except the N.E., the sea-margin is necessarily large; but the ocean nowhere penetrates the land very deeply, and there are extensive tracts in the interior at a great distance from the sea. The entire coast-line is estimated at 2300 miles, of which 1800 belong to Spain and 500 to Portugal; being 1 mile of coast to each 98 miles of surface—a ratio greatly inferior to that of the other European peninsulas, all of which are deeply indented by the sea.

Area and Population.—The area of the Peninsula alone is 227,420 sq. miles, or considerably more than the area of France; 190,936 miles belong to Spain, and 36,484 to Portugal. Including the Balearic and Canary Isles, the area of Spain is 195,914 sq. miles; and that of Portugal, including the Azores and Madeira, 37,965 sq. miles. Hence the area of Spain and Portugal, including the islands, is nearly double that of the Brit. Isles. In May 1867 the total population of Spain amounted to 16,641,980, of which half a million belonged to the islands. The population of Portugal, in 1868, amounted to 4,360,974, of which 366,000 belonged to Madeira and the Azores. Hence the entire population of the Peninsula with its islands does not nearly equal the population of England and Wales in 1871, though the area is four times greater. In the beginning of the fourteenth century the population of the Peninsula was greatly denser than at present, that of Spain alone having been estimated at nearly 22,000,000; but in the four subsequent centuries it declined to little more than 5,000,000. It is now again advancing, though very slowly. In the first half of the present century it increased about 40 per cent, the population of 1803 having been estimated at 10,351,000. The numerous wars in which Spain has been engaged, the loss of her colonies and commerce, the want of water in the interior, the indolence of the inhabitants, and, above all, the blighting agency of her

religion, account in a great measure for the stationary and frequently retrograde condition of the population. The population of Portugal has increased considerably during the century.

Political Divisions.—Previously to 1833, Spain was divided into fifteen, or, including Granada, into sixteen provinces, many of which were called kingdoms. These were then subdivided into forty-nine new provinces (including the Balearic Isles and the Canaries), which, in general, bear the names of their respective capitals. The three Basque provinces, however, and Navarra, retain their former names. The following is a list of the old provinces, with their capitals, showing the new provinces into which they have been partitioned :—

Old Provinces.	Capitals.	New Provinces.
Guipuzcoa	Tolosa	Guipuzcoa.
Biscaya	Bilbao	Biscaya.
Alava	Vitoria	Alava.
Asturias	Oviedo	Oviedo.
Galicia	Santiago de Compostella	Lugo, Coruña, Pontevedra, Orense.
Leon	Leon	Leon, Zamora, Salamanca.
Estremadura	Badajos	Caceres, Badajos.
Andalucia	Seville	Sevilla, Cordova, Jaen, Huelva, Cadiz.
Granada	Granada	Granada, Almeira, Malaga.
Murcia	Murcia	Murcia, Albacete.
Valencia	Valencia	Alicante, Valencia, Castellon-de-la-Plana.
Catalonia	Barcelona	Tarragona, Barcelona, Gerona, Lerida.
Aragon	Zaragoza	Huesca, Zaragoza, Teruel.
Navarra	Pamplona	Navarra.
Old Castile	Burgos	Santander, Logrono, Burgos, Palencia, Valladolid, Soria, Segovia, Avila.
New Castile & La Mancha	Madrid	Madrid, Guadalaxara, Cuenca, Toledo, Ciudad Real.

The forty-seven continental provinces are most conveniently arranged as follows :—

Seven north-western provinces, fronting the Bay of Biscay. Seven western, embracing Leon, Estremadura, and part of Galicia. Eight southern, embracing Andalucia and Granada. Seven eastern, comprising Murcia, Valencia, and a part of Catalonia. Six north-eastern, containing the remainder of Catalonia, Aragon, and Navarra. Twelve central, embracing Old and New Castile, with La Mancha. In the following lists, towns of above 10,000 inhabitants are put in large type, and those ranging between 10,000 and 5000 in small.

SEVEN NORTH-WESTERN PROVINCES.

Guipuzcoa.*—TOLOSA 5 (Orria), San Sebastian 19 (Urumea). Towns between 5000 and 10,000 inhabitants. Fuenterrabia.

Biscaya.—BILBAO 25 (Nervion).

Alava.—VITORIA 16 (Zadorra, *affl.* of the Ebro).

Santander.—SANTANDER 30 (Miera).

Oviedo.—OVIEDO 28 (Nalon), Gijon 7, Aviles 6 (N. coast).

Lugo.—LUGO 7 (Minho), Mondonedo 6 (Masma).

Coruña.—CORUÑA 30 (Mero), Ferrol 17 (W. coast), Padron 6, Santiago de Compostella 27 n. (Ulla).

SEVEN WESTERN PROVINCES.

Pontevedra.—PONTEVEDRA 5 (Lerey), Vigo 8 (Ria de Vigo).

Orense.—ORENSE 5 (Minho).

Leon.—LEON 6 (Bornesga).

Zamora.—ZAMORA 10, Toro 8 (Douro), Benavente 12 (Esla).

Salamanca.—SALAMANCA 15 (Tormes), Ciudad Rodrigo 5 (Agueda).

Caceres.—CACERES 12 (Caceres).
Garrobillas, Placentia, Trujillo, Montanches, Alcantara.

Badajos.—BADAJOS 23, Olivenca 10, Don Benito 15, Villanueva de Serena 10 (Guadiana).
Xeres de los Caballeros, Albuquerque, Villafranca, Llerena, Cabeza del Buey, Castuera, Fregenal de la Sierra.

EIGHT SOUTHERN PROVINCES.

Sevilla.—SEVILLA 82 (Guadalquivir), Utrera 13 n. (Salado), Moron

* **The following rules will materially assist in pronouncing Spanish words :—**
ce, ci = *th* in thin: as Caceres, Ciudad (*Că'-the-res, Thĭ-ŭ'-dad*).
ch = *tch*, or *ch* in Church; never *sh*, as in Portuguese and French.
d, precisely the same as in English, but in some of the provinces of Spain, *d*, between two vowels, = *th* in this: thus Mondonedo (*Mon-do-netho*).
g, before a, o, u, l, r = g in *go*; but *g* before e, i, is, like our *h*, very strongly aspirated, as Genil (*Henil*); in the syllables *gue, gui*, the *g* is hard, though the *u* is silent.
h, initial is silent: as Hinares (*Inares*); but when followed by *ue*, it has a very slight and somewhat nasal sound.
j and *x*, strong guttural sounds = *ch* in the Scotch and German, or χ in Greek: as Xucar or Jucar, pronounced *Hucar*, with the *h* very strong.
ll = *ll* in French, *gl* in Italian, or *lli* in English *brilliant*: thus Llobregat, Llerena.
ñ = Italian *gn*, French *gne*, or English *ni* in Spaniard: as Coruña (*Cor-un'-ya*).
que, qui = English *kee*: as in Guadalquivir (*Gua-dal-kĭ-vir'*).
r initial, and *rr* in the middle of words have a strong rolling sound, as in Ronda, Zadorra.
s = English *s* in chase; never like English *z*.
th = English *t*: as Thomar (*To'mar*).
z, as *th* in thin: thus, Zaragoza (*Tha-ra-go'tha*).
Vowels: *a* = *a* in father, never like *a* in make; *i* and *y* = *ee*, or *i* in machine; *u* = Italian *u*, or English *w* in rule; *au* like *ou* in our; *ay* and *ai* = *i* in pine; as Daimiel, also spelled Daymiel (*Dī'miel*); *eu* = *ow* in now.

de la Frontera 13 (Guadairo), Carmona 15, Marchena 13 (Carbones), Osuna 17 n. (Madre Vieja), Ecija 24 (Genil or Xenil).
Lebrija, Constantina, Cazalla, Alcala, Fuentes-de-la-Campana, Estepa.

Cordova.—CORDOVA 36, Montoro 11 (Guadalquivir), Montilla 13 n., Cabra 12, Lucena 17 n. (Cabra), Baena 13 n. (Guadajos), Priego 14 (Salado, *affl.* Genil).
Palma, Bujalance, Rambla, Villanueva, Hinojosa, Pozoblanco, Castro del Real, Espeja, Fernan Nuñez, Puente-Genil.

Jaen.—JAEN 23 (Jaen, *affl.* Guadalquivir), Baeza 11, Andujar 10, Ubeda 14 (Guadalquivir), Alcala la Real 12 (Guadajos), Martos 11 (Salado).
Cazorla, Linares, Alcandete, Torre Don-Gimeno, Porcunna.

Huelva.—HUELVA 7 (Odiel).
Valverde, Moguer, Palos, Ayamonte.

Cadiz.—CADIZ 62, San Fernando 10 (Isle of Leon), San Lucar 16 (Guadalquivir), Puerto S. Maria 18, Xeres de la Frontera 39, Arcos 11 (Gaudalete), Chiclana 21, Medina-Sidonia 11 (Lerio), Algeciras 11 (Strait of Gibraltar).
Rota, Olvera, Ubrique, Vejer de la Frontera, Alcala de los Gazules, Tarifa, San Roque, Gimena, Grazalema.

Malaga.—MALAGA 93, Antequera 17 (Guadaljorce), Velez Malaga 16 (Velez), Ronda 16 (Guadiaro).
Estepona, Marbella, Archidona, Alora, Alhaurin, Coin, Monda, Colmenar.

Granada.—GRANADA 62, Loja 15 (Genil), Motril 12 (Guadalfeo), Baza 11 n. (Barbata, *affl.* Guadalquivir).
Montefrio, Alhama, Almuñecar, Adra, Huescar, Puebla.

Almeria.—ALMERIA 29 (Almeria), Cueva de Vera 10, Huercalovera 12 (Almanzora), Velez Rubio 12 (Velez), Berja 10 (Adra).
Nijar, Gergal, Dalias, Mojacar, Vera, Seron, Velez Blanco, Oria.

SEVEN EASTERN PROVINCES.

Murcia.—MURCIA 88, Cieza 10 (Segura), Lorca 40 (Sangonera), Caravaca 10, Cehigan 10 (Caravaca), Cartagena 22 (S. coast).
Yecla, Jumilla, Mula, Calasparra, Alhama, Fuente, Alamo, Totana, Almazarron, Bullas, Moratello.

Albacete.—ALBACETE 11 n., Chinchilla 12 n. (Guadarmina, *affl.* Guadalquivir), Hellin 10 (Mundo), Peñas de San Pedro 10 (Madera).
Alcaraz, Bonillo, Almanza, Tarazona, Tobarra, Caudete, Yeste.

Alicante.—ALICANTE 31 (E. coast), Orihuela 18 (Segura), Elche 18 (Elche), Alcoy 27 (Alcoy).
Villajoyosa, Aspe, Novela, Monovar, Villena, Gandia, Concentaina, Crevillente.

Valencia.—VALENCIA 87 (Guadalaviar), Alcira 13 (Jucar), San Felipe de Xativa 13 (Albayda).
Liria, Cullera, Sueca, Ayora, Carcajente, Onteniente, Enguera, Murviedro, Torrente.

Castellon-de-la-Plana.—CASTELLON-DE-LA-PLANA 17 (Mijares), Vinaros 11 (Cenia).
Segorbe, Villa-Real, Alcora, Benicarlo, Burriana, Morella.

Tarragona.—TARRAGONA 13, Reus 28 n., Valls 11 (Francoli), Tortosa 26 (Ebro).

Barcelona.—BARCELONA 180 (Besos), Igualada 10 (Nova), Manresa 13 (Llobregat), Vich 10 (Ter), Villanueva 10 (Foix), Mataro 13 (coast).
Tarrasa, Villafranca, Cervera.

SIX NORTH-EASTERN PROVINCES.

Gerona.—GERONA 8 (Ter), Olot 12 (Fluvia).
Blanes, S. Feliu de Guixols, Figueras.

Lerida.—LERIDA 17 (Segre).

Huesca.—HUESCA 9 (Isuela), Fraga 5, Barbastro 6 (Cinca).

Zaragoza.—ZARAGOZA 56 (Ebro).
Caspe, Tarazona, Calatayud.

Teruel.—TERUEL 7 (Guadalaviar), Alcañiz 6 (Gaudalope).

Navarra.—PAMPLONA 23 (Agra).
Tudela, Estella, Sanguesa.

TWELVE CENTRAL PROVINCES.

Burgos.—BURGOS 26 (Arlanzon, *affl.* Douro).

Logroño.—LOGROÑO 7, Calahorra 6, Haro 6 (Ebro).

Palencia.—PALENCIA 11 (Carrion, *affl.* Pisuerga).

Valladolid.—VALLADOLID 40 (Pisuerga).
Medina de Rio Seco.

Soria.—SORIA 3 (Douro).

Segovia.—SEGOVIA 13 (Eresma, *affl.* Douro).

Avila.—AVILA 5 (Adaja, *affl.* Douro).

Madrid.—MADRID 332 (Manzanares).
Alcala, Chinchon, Colmenar.

Guadalaxara.—GUADALAXARA 5, Siguenza 5 (Henares).

Cuenca.—CUENCA 6 (Xucar), Requena 11, Utiel 6 (Magro).

Toledo.—TOLEDO 15 (Tagus).
Talavera, Madridejos, Quintanar, Ocaña.

Ciudad Real.—CIUDAD REAL 8 n. (Guadiana), Almagro 13 n., Valdepenas 10 (Jabalon), Daimiel 12 (Azur).
Manzanares, Solana, Almodovar, Alcazar, Herencia, Almaden.

TWO INSULAR PROVINCES.

Baleares.—PALMA 40, Manasor 10, Soller 7. (Majorca), Port-Mahon 13, Ciudadela 8 (Minorca), Iviza 6 (Iviza).

Canaries.—SANTA CRUZ 11, Laguna 7, Orotava 8 (Island Teneriffe), Las Palmas 13 (Grand Canary).

PORTUGAL formerly consisted of six, but latterly of eight provinces (besides the Azores and the Madeira group), and these

are subdivided for administrative purposes into twenty-six *comarcas* or shires.

Minho.*—BRAGA 20 (Ria d'Este).
Viana, Guimaraens, Prado.

Tras-os-Montes.—BRAGANCA 5 (Sabor).

Douro or **Maritime Beira.**—OPORTO 89 (Douro), Coimbra 18 (Mondego), Ovar 10 (Vouga).
Aveiro, Mira, Figuera.

Upper Beira.—VISEU 9 (Vouga), Lamego 9 n. (Douro), Almeida 7 (Coa).

Lower Beira.—CASTELLO BRANCO 6 (Vereza), Covilha 5 (Zezere)

Estremadura.—LISBON 224 (Tagus), Setubal 13 (Sadao).
Abrantes, Torres-Vedras, Cezimbra, Vimeira.

Alemtejo.—EVORA 13 (Xarama), Elvas 11 (Guadiana).
Portalegre, Castello de Vide, Estremoz, Beja, Serpa.

Algarve.—FARO 8, Lagos 7, Loulé 8 n., Tavira 11 (S. co.)

Azores.—ANGRA 12 (Terceira), Ponta Delgada 16 (San Miguel).

Madeiras.—FUNCHAL 18 (Madeira), Porto Santo 6 (Porto Santo).

Descriptive Notes.—Spain, including the islands, contains only two cities of above 100,000 inhabitants—viz., Madrid and Barcelona; seven above 50,000—viz., Malaga, Valencia, Seville, Murcia, Cadiz, Zaragosa, Granada; and nineteen between 20,000 and 50,000. The southern provinces (Andalucia and Granada) are by far the most densely peopled portions of the kingdom, and contain a full half of the total number of towns; the twelve central provinces are very thinly peopled, while the western and north-western are the least populous of all.

San Sebastian, a strongly-fortified seaport-town, and the largest in the province, was taken by storm by the British from the French in 1813, and reduced to ashes; but has since been rebuilt, and is now one of the finest cities in Spain. **Bilbao**, the principal port of the north of Spain, and the great emporium of Spanish wool for exportation. **Vitoria**, celebrated for a great victory gained by the Duke of Wellington over the

* The Portuguese vowels *a*, *e*, *i*, *o*, *u*, *y*, and the diphthongs *ai*, *ay*, *au*, *ei*, and *ey*, have essentially the same sound as in Spanish; but *ao* is nasal, as in Macao (*Ma-coung'*), while the combinations *ei* and *oi* are not diphthongs: as Beira, Coimbra (*Be'i-ra*, *Co-im'bra*).
c has a hard and soft sound as in English, but has the *cedilla* more frequently than in Spanish.
ch and *x* = *ch* in French or *sh* in English: thus, Chaves, Funchal, Xeres (*Shâ'ves*, *Fung'shal*, *Sha'res*).
g before *e*, *i*, and *y*, and *j*, have the same sound as in French: as Caldas-do-Geres, Alemtejo (*Caldas-do-Zhe'res*, *Al-eng-te'zho*).
h is always silent, but when it follows *l* or *n* it renders these letters liquid: thus, Covilha, Minho (*Co-vil'ya*, *Min'yo*).
m and *n* are frequently nasal, and similar to that of *ao*: as Alemtejo (*Al-eng-te'zho*).
gu and *qu* are sounded like our *g* hard and *k*, the *u* being silent: thus, Guadiana, Ourique (*Ga-di-a'na*, *Oo-ree'kay*).

French in 1813. **Santander** was sacked by the French in 1808: it has productive iron-mines in the vicinity. **Oviedo**, noted for its hot mineral springs and baths. **Coruna**, a flourishing commercial and fortified town, with a fine harbour. It was from this port the Spanish Armada set sail for the conquest of England in 1588; and near this, on the heights of Elvina, the French were defeated by the troops under Sir John Moore, who fell in the hour of victory, January 1809. **Ferrol**, one of the three principal arsenals of Spain, is strongly fortified. **Santiago de Compostella**, with a university, and a magnificent cathedral dedicated to St James the Elder, the patron saint of Spain. **Zamora**, with manufactures of coarse woollen hats, leather, and gunpowder. **Salamanca**, with an ancient and famous university, formerly the principal seat of learning in Spain, but now greatly decayed: here the French were defeated by Wellington in 1812. **Badajos**, a strongly-fortified city on the Guadiana, repeatedly taken and retaken in the Peninsular war, is the birthplace of the painter Morales. **Seville** or **Sevilla**, one of the most ancient towns in Europe, the capital of Spain under the Gothic dynasty, and afterwards of Andalucia, was long the chief residence of the Spanish monarchs; has a fine cathedral, and one of the principal universities of Spain: it has the largest cigar and tobacco manufactory in Europe, employing 3000 persons. **Cordova**, once the capital of the Caliphate of the West, and afterwards of the kingdom of Cordova. In modern times this city was noted for its manufacture of a sort of leather, called *cordwain* or *cordovan*, which has now declined. **Cadiz**, a large fortified city on the Isle of Leon, the principal commercial city in the kingdom, and the centre of the trade in sherry wine. **Xeres de la Frontera**, extensively engaged in the manufacture of wine, and giving its name (*sherry*) to one variety. **Malaga** is the chief port of the province, and largely engaged in exporting wines, raisins, almonds, and other fruits. The Malaga raisins, called muscatels, fetch a greatly higher price than any other description. **Granada**, in a plain renowned for its beauty and fertility, was the capital of the last Moorish kingdom in Spain; the palace of the kings, the famous Alhambra, a noble specimen of Moorish architecture, is still standing. **Murcia**, with government factories of nitre and gunpowder, and a richly-decorated cathedral. **Lorca**, a busy thriving town, with manufactories of saltpetre, linen, and thread. **Cartagena** or **Carthagena**, founded by a Carthaginian colony, on the finest harbour in the Mediterranean, is the chief naval arsenal of Spain. **Valencia**, a large maritime and manufacturing city, with a flourishing university, is largely engaged in the silk manufacture. **Tortosa**, a strongly-fortified city on the Ebro, with an active fishery in sturgeons and lampreys. **Barcelona**, the former capital of Catalonia, and the second city in Spain in point of population, is strongly fortified, has a university and four public libraries, one of which is celebrated as containing many valuable MSS. Barcelona is largely engaged in trade and manufactures, and has for ages been a place of great importance. **Zaragoza** or **Saragossa** (Cæsarea Augusta), an ancient and populous city on the Ebro, and the only place of importance in the north-eastern provinces, was the capital of the old kingdom of Aragon; it contains a university; and its cathedral is celebrated over Spain for its sanctuary, which attracts numerous pilgrims. Memorable for a most heroic defence against the French in 1809. **Pamplona** (Pampelo), one of the principal fortresses of Spain, was taken from the French by the British in 1813. **Burgos**, the former capital of Old Castile, is now chiefly celebrated for its cathedral, reckoned one of the finest in Europe, **Valladolid**, formerly a place of great importance, but now much decayed, contains a celebrated univer-

sity; here Columbus died in 1506. **Segovia**, noted for its magnificent Roman aqueduct of 161 arches, and numerous other remains of its former grandeur. **Madrid**, the capital of Spain, occupies an elevated site in the centre of a barren plain, 2200 feet above the level of the sea, and far from any navigable river. It is subject to great inequalities of temperature, and is reckoned very unhealthy. It is about eight miles in circuit; the modern part of the city is handsome, but the number of convents and other religious houses, with grated windows and without visible doors, gives the streets a sombre aspect. Madrid is the birthplace of Alonzo d'Ercilla, Lopez de Vega, Calderon de la Barca, Nuñez, and the brothers Velasquez. **Toledo** was the capital of Spain under the Goths, at which time it had 200,000 inhabitants, though now it has but 13,000. It has long been famous for the manufacture of sword-blades, and great skill is still shown in tempering them. **Almaden**; near it are valuable quicksilver-mines, the most ancient in the world. **Palma**, a fortified city on the S.W. coast of Majorca, has in its vicinity a huge palace, formerly occupied by the Spanish Inquisition. **Port Mahon**, also a fortified town, capital of Minorca, and the residence of the military governor. **Santa Cruz**, capital of the Canary Islands, in the island Teneriffe, has an export trade in wine. **Las Palmas**, the principal town in the same group, has a population of 13,000.

TOWNS IN PORTUGAL.—Portugal, including the islands, contains only two towns above 50,000 inhabitants—Lisbon and Oporto; one at 20,000—Braga; and eleven between 10,000 and 20,000.

Braga, capital of Minho, a considerable town with manufactures of firearms, jewellery, cutlery, and hats. **Bragança**, which gives title to the present royal family, has manufactures of velvets and other silk fabrics. **Chaves**, a fortified town, with hot saline springs of 129° Fahr. Oporto, or Porto, a large commercial city at the mouth of the Douro; in population and commercial importance it ranks next to Lisbon, which it excels in the amount and variety of its manufactures. It exports immense quantities of *port* wine, and has extensive silk-factories, and some of linen and cotton goods. **Coimbra**, on the Mondego, is the seat of the sole university in the kingdom. Coimbra is one of the rainiest localities in Europe—118 inches of rain fall annually. **Lisbon**, the capital of Portugal, on the right bank of the **Tagus** near its mouth, with about a quarter of a million inhabitants. It contains many splendid architectural monuments, especially the palaces of the nobility, and the magnificent aqueduct of Alcantara, with thirty-six arches of white marble. The streets, however, are narrow, winding, and dirty. There are few important manufactures, except of jewellery and trinkets; and its commerce, which was once considerable, has greatly declined since the Portuguese colonies became independent. Lisbon was the birthplace of Camoens. **Torres-Vedras**, celebrated in the Peninsular war for the lines of defence constructed by Wellington in 1810 to obstruct the approach of the French. **Vimeira**, where the Duke of Wellington defeated the French in 1808. **Evora**, an ancient city of Roman origin, with manufactures of hardware and leather. **Elvas**, a fortified frontier city on the right bank of the Guadiana, with a college and a Moorish aqueduct. **Faro** exports fresh and dried fruits, wine, cork, sumach, and anchovies. **Angra**, a fortified seaport, and capital of the Azores, with a military college and other educational establishments. **Ponta Delgada** is the principal town in the

Azores with regard to population and commerce. **Funchal**, the capital of the island Madeira, is engaged in the manufacture and exportation of Madeira wine.

Capes.—*In Spain:* Cape Finisterre, in Galicia, the most western point of Spain; Ortegal, in the same province, the most northern point of Spain; Creux, in Catalonia, the most eastern; St Martin, in Valencia; Palos, in Murcia; Gata, in Granada; Europa Point near Gibraltar; Tarifa Point, the most southern point of the continent of Europe; Trafalgar, W. of Andalucia, off which Lord Nelson defeated the combined French and Spanish fleets, in 1805. *In Portugal:* Cape Santa Maria, the southernmost point of Portugal; St Vincent, S.W. of Algarve, off which Sir John Jervis signally defeated the Spanish fleet, in 1797; Espichel and Roca guard the entrance of the Tagus: the latter is the most western point of the continent of Europe.

Islands.—*Spanish:* the Balearic Isles,* E. of Valencia, consisting of Majorca, Minorca, Iviza, Formentera, and Cabrera: Leon, W. of the province Cadiz; Canary Islands,† 60 miles S.W. of Marocco—the principal are Lazarote, Fuerte Ventura, Grand Canary, Teneriffe, Gomera, Palma, and Hiero. *Portuguese:* The Azores,‡ 800 miles W. of Portugal; principal, San Miguel, Terceira, Pico, San Jorge, Santa Maria. The Madeira Isles,§ 660 miles S.W. of Portugal, consist of Madeira, Porto Santo, and the Desertas.

Bays and Straits.—Bay of Santander, in Santander; Ria de Betanzos and d'Arosa, W. of Galicia; Bay of Cadiz, Bay and Strait of Gibraltar, Gulf of Almeria, S. of Andalucia; Gulfs of Amposta and Rosas, E. of Catalonia. *In Portugal:* Bahia d'Aveiro, W. of Douro; estuary of the Tagus and Bay of St Ubes, in Estremadura; Bay of Lagos, S. of Algarve.

Surface and Mountains.—The Iberian Peninsula—the most westerly of the three grand peninsulas of Southern Europe—in its general characteristics more closely resembles Africa than it does the rest of Europe. For the most part it consists of a lofty plateau, which, in its interior, attains to an elevation of about 2500 feet, and which is skirted on all sides by a low belt of land separating it from the sur-

* In Spanish, *Baleares;* they form one of the 49 provinces; area, 1758 sq. m., population (1864,) 278,000. The climate is temperate and healthy, the soil fertile; principal products—olives, wine, brandy, fruits, saffron, flax.

† The Canaries are of volcanic origin: many extinct craters are found among the mountains, which attain a great elevation, especially the Peak of Teneriffe, which is 12,182 feet above the level of the sea. The climate is equable, and the tropical heat is moderated by the Atlantic breezes: principal products are wine, oil, grain, sugar-cane, and fruits. Area, 3228 sq. m.; pop. (in 1864), 256,408.

‡ The Azores, or Western Islands—in Portuguese *Açores*—are of volcanic origin, with steep and rugged coasts, abounding with deep ravines and lofty mountains. The peak of Pico is 7613 feet high. Climate temperate and healthy, but subject to violent earthquakes: principal products are wines, all kinds of grain and pulse, oranges, sugar-cane, coffee, and tobacco. Area, 1147 square miles; population in 1864, 251,894.

§ The island of Madeira has a peculiarly genial climate, and it is resorted to by invalids afflicted by pulmonary diseases. Area, 334 sq. m.; pop. (1863), 111,764.

rounding seas. The two loftiest mountain-ranges form, respectively, the southern and northern boundaries of this plateau, while the three intermediate ranges traverse it. Owing to the peculiar *saw-like* appearance of their summits, the different ranges are termed *sierras*. The culminating-point of the entire Hesperian system is Cerro Mulhaçen, in the Sierra Nevada, 11,663 feet, where the line of perpetual congelation is 11,200 feet above the sea, while in the Pyrenees it is only 8856 feet.

The Pyrenees, with the mountains of Asturias, which form their western continuation, extend from Cape Creux in Catalonia to Cape Finisterre in Galicia, and separate the basin of the Garonne, Adour, and Bay of Biscay, from the basins of the Ebro and Douro: highest summits—Mount Maladetta (near the centre of the Pyrenees), 11,168 feet; Sierra Penamarella, in Leon, 10,000 feet.

Mountains of Castile, or central chain, separating the basins of the Douro and Tagus: Sierra Gredos, between Old Castile and Estremadura, 10,552 feet; Sierra d'Estrella, in Beira, 7524 feet.

Mountains of Toledo, extending from Cape Espichel in Portugal to the S.W. of Aragon, and separating the basins of the Tagus and Guadiana: Sierra de Guadalupe, 5115 feet.

Sierra Morena, from Cape St Vincent to Cape St Martin, and separating the basins of the Guadiana and Guadalquivir in the W. from those of the Xucar and Segura in the E.; Mount Aracena, in Seville, 5550 feet; Sierra Monchique, in Algarve, 4080 feet.

Sierra Nevada, from the Rock of Gibraltar to Cape Palos, and between the basin of the Guadalquivir and the Mediterranean: highest summit, Cerro Mulhaçen, in Granada, 11,663 feet, forming the culminating-point of the Peninsula.

River-Basins.—The grand line of water-parting of Europe traverses the Peninsula from S.W. to N.E. Commencing at Tarifa Point, it follows the crest-line of the Sierra Nevada in an easterly direction, then turning northward, it forms a semicircular curve, the concave side of which is towards the Atlantic, and strikes the Pyrenees near the source of the Ebro. It thus divides the Peninsula into two unequal slopes, the larger of which bends towards the Atlantic and the smaller towards the Mediterranean. Hence, of the five principal rivers, no fewer than four (Douro, Tagus, Guadiana, and Guadalquivir) find their way to the Atlantic, while the Ebro alone flows to the Mediterranean. The combined area of the former amounts to 85,000 sq. m., and embraces 25 out of the 55 provincial capitals of Spain and Portugal; while the Ebro drains 25,000 sq. m., and embraces in its basin 6 capitals.

Table of Rivers and Towns.—There are 315 towns in the Peninsula at or above 5000 inhabitants, of which 117 exceed 10,000. These stand on 154 rivers, of which 54 enter the sea, the remaining 100 being their affluents. These 315 towns are given in the following table. The capitals of provinces are distinguished by being printed in SMALL CAPITALS, towns above 10,000 in Roman letters, and the remainder in *Italics*.

Basins inclined to the Atlantic.

Rivers.	*Towns.*
Bidassoa,	*Fuenterrabia.*
Urumea,	San Sebastian.
Orria,	Tolosa.
Nervion,	Bilbao.
Miera,	Santander.
N. Co.,	*Gijon, Aviles.*
Nalon,	Oviedo.
Masma,	*Mondonedo.*
W. Co. Galicia,	Ferrol.
Mero,	Coruña.
Ulla,	*Padron*, Santiago de Compostella, n.
Lerey,	*Pontevedra.*
Ria-de-Vigo,	*Vigo.*
Minho,	Orense, Lugo.
Lima,	*Viana.*
Cavado,	*Prado.*
Ria d'Este,	Braga.
Ave,	*Guimaraens.*
Douro,	Oporto, Zamora, *Toro*, Soria.
Corga,	Lamego.
Sabor,	Bragança.
Coa, *l*	*Almeida.*
Agueda, *l*	*Ciudad Rodrigo.*
Tormes, *l*	Salamanca.
Eala,	Benavente.
Tuerto,	*Astorga.*
Bornesga,	Leon.
Seguillo,	Medina del Rio Seco.
Pisuerga,	Valladolid.
Carrion,	Palencia.
Arlanzon, *l*	Burgos.
Adaja, *l*	Avila.
Eresma,	Segovia.
Vouga,	Ovar, *Aveiro*, Viseu.
Co. of Douro,	*Mira.*
Mondego,	*Figueira*, Coimbra, *Guarda.*
Soura, *l*	*Pombal.*
Sizandro,	*Torres-Vedras.*
Tagus,	Lisbon, *Santarem*, *Abrantes Garrobellas*, Talavera de la Reina, Toledo, *Ocaña*, n., *Colmenar.*
Zatas, or Erwidal, *l*	*Portalegro.*
Anhatura, *l*	*Estremoa.*
Zezere,	*Covilha.*
Veresa,	Castello-Branco.
Figueiro,	*Castello de Vide.*
Sever, *l*	*Valencia de Alcantara.*
Salor, *l*	*Montanches.*
Caceres,	Caceres.
Alagon,	*Alcantara*, *Bejar.*
Jerte, *l*	*Placentia.*
Rio del Monte,	*Trujillo.*
Tajuna,	*Chinchon.*
Xarama,	Madrid, n.
Manzanares,	Madrid.
Hinares, *l*	*Alcala*, Guadalaxara.
Co. Estremadura,	*Cezimbra.*
Sadao,	Setubal.
Xamara,	Evora.
S. Co. Algarve,	Lagos, Faro, Loulé, Tavira.
Guadiana,	*Ayamonte*, *Serpa*, Olivenza, Elvas, Badajos, Don Benito, Villanueva de Serena, n., Ciudad Real, n.
Odiarca,	*Beja.*
Ardila, *l*	*Xeres de los Caballeros.*
Murtiga, *l*	*Fregenal de la Sierra.*
Gavora,	*Albuquerque.*
Guadajira, *l*	*Villafranca.*
Matachal, *l*	*Llerena.*
Zujar, *l*	Villanueva, *Cabeza del Buey.*
Guadalefra, *l*	*Castuera.*
Guadalmez,	*Almaden*, n.
Guadarmillo,	*Hinojosa*, n., *Pozoblanco.*
Jabalon, *l*	Almagro, n., Val de Peñas, *Santa Cruz de Mudela*, *Villanueva de los Infantes*, n.
Vejer, *l*	*Almodovar.*
Zancara,	*Alcazar de San Juan*, n.
Giguela,	*Herencia*, *Quintanar.*
Amarquilla,	*Madridejos*, *Consuegra.*
Azuer, *l*	Daimiel, *Manzanares*, *Solana.*
Odiel,	Huelva, *Valverde.*
Tinto,	*Palos*, *Moguer.*
Guadalquivir,	*Lebrija*, S. Lucar de Barameda, Seville, Carmona, n., Cordova, *Bujalance*, Montoro, Andujar, Baeza, n., Ubeda.
Salado, *l*	Utrera, n.
Guadaira, *l*	*Alcala*, Moron-de-la-Frontera.
Guesna,	*Constantina*, *Cazalla.*
Carbones, *l*	Carmona, Marchena.
Madre Vieja, *l*	*Campana*, *Fuentes-de-la Campana*, Osuna, n.
Genil, *l*	Ecija, *Puente-Genil*, *Estepa*, n., Loja, *Montafrio*, n., Granada.

Basins inclined to the Atlantic (continued).

Rivers.	*Towns.*
Cabra,	*Rambla*, n., Montilla, n., Cabra, Lucena, n.
Salado,	Priego.
Alhama, *l*	*Alhama.*
Guadiata,	*Villanueva.*
Guadajos, *l*	*Fernan Nuñez*, n., *Espejo*, Castro, Baena, n., Alcala la Real.
Salado, *l*	*Porcunna*, n., *Torre Don-Gimeno*, Martos.
Guadarmina,	*Alcaraz*, ALBACETE, n., Chinchilla, n., *Bonillo.*
Guarrezas,	*Linares.*
Jaen, *l*	JAEN.
Gaudiana-Minor, *l*	Ubeda.
Barbata,	BAZA, n., *Huescar*, *Puebla.*
Vega, *l*	*Cazorla.*
Guadalete	CADIZ, n., *Rota*, n., Puerto Santa Maria, Xeres de la Frontera, Arcos, *Olvera.*
Majaceite, *l*	*Ubrique.*
Lirio,	San Fernando, n., Chiclana, Medina-Sidonia.
Barbate,	*Vejer.*
Vadalmedina,	*Alcala de los Gazules.*

Basins inclined to the Mediterranean.

Strait of Gibraltar,	*Tarifa*, Algeciras, Gibraltar, *San Roque.*
Guadiaro,	*Gimena*, *Grazalema*, n., Ronda.
S. Co. Malaga,	*Estepona*, *Marbella.*
Guadaljorce,	MALAGA, n., *Alora*, Antequera, *Archidona.*
Fsala,	*Alhaurin*, *Coin*, *Monda.*
Velez,	Velez Malaga, *Colmenar*
S. Co. Granada,	*Almuñecar.*
Guadalfeo,	Motril.
Adra,	*Adra*, *Dalias*, Berja.
Almeria,	ALMERIA, *Nijar*, n., *Gergal*, n.
Almanzora,	Vera, Cueva de Vera, *Seron*, Huercalovera.
S. Co. Murcia,	*Almazarron*, Cartagena.
Segura,	Orihuela, MURCIA, Cieza, *Calasparra*, *Yeste.*
Elche, *l*	Elche, *Crevillente*, *Aspe*, *Novelda*, *Monovar*, *Villena*, *Yecla*, n., *Caudete.*
Alfera,	*Almanza.*
Sangonera,	MURCIA, *Mula*, n., *Alhama*, n., *Fuente*, *Alamo*, *Totana*, Lorca, *Velez Blanco.*
Quiper,	*Bullas.*
Velez,	Velez Rubio, *Oria*, n.
Caravaca,	Caravaca, Cehigan.
Moratalla,	*Moratalla.*
Mundo, *l*	Hellin, *Jumilla*, n., *Tobarra.*
Madera, *l*	Penas de San Pedro, n.
E. Co. Alicante	ALICANTE, *Villajoyosa.*
Alcoy,	*Gandia*, *Concentaina*, Alcoy.
Xucar,	*Cullera*, *Sueca*, Alcira, *Ayora*, n., CUENÇA.
Magro, *l*	Requena, *Utiel.*
Albayda,	Xativa San Felipe, *Carcagente*, Onteniente.
Canoles, *l*	*Enguera.*
Jara, *l*	*Tarazona.*
Guadalaviar,	VALENCIA, TERUEL.
Palancia,	*Murviedro*, *Segorbe.*
Rio Seco,	*Burriana.*
Mijares,	CASTELLON-DE-LA-PLANA *Alcora*, n.
Co. Castellon-de-la-Plana,	*Benicarlo*, Vinaros.
Ebro,	Tortosa, *Caspe*, ZARAGOZA, *Tudela*, *Calahora*, LOGROÑO, *Haro.*
Segre, *l*	LERIDA.
Cinca,	*Fraga*, *Barbastro.*
Isuela,	HUESCA.
Balira,	ANDORRA (capital of Republic).
Guadalope,	*Alcaniz.*
Bergantes,	*Morella*, n.
Jalon,	*Calatayud.*
Queilas,	*Tarazona.*
Alhama,	*Corella.*
Aragon, *l*	*Sanguesa.*
Agra,	PAMPLONA.
Ega, *l*	*Estella.*
Zadorra, *l*	VITORIA.
Francoli,	TARRAGONA, Reus, Valls.
Foix,	Villa-Nueva, *Villafranca.*
Llobregat,	*Tarrasa*, Manresa.
Noya,	Igualada, *Cervera*, n.
Besos,	BARCELONA.
Co. of Catalonia,	Mataro, *Blanes*, *S. Feliu de Guixols.*
Ter,	GERONA, Vich.
Fluvia,	Olot.
Manol,	*Figueras.*

Lakes.—There are no lakes of any importance in either Spain or Portugal. There is, however, a large salt-water lagoon on the coast of Valencia, abounding in fish and wild-fowl, called Albufera de Valencia; and three small lakes in Ciudad-Real, near the sources of the Guadiana.

The first, which forms its source, is called Lake Real; then the river traverses some miles of its course under ground, and reappears in two small lakes called Los Ojos de Guadiana, or "the Eyes of the Guadiana."

Climate.—The Peninsula being so extensive, and there being a great difference of elevation between the interior and the maritime districts, great differences of climate exist. On the great central plateau, which has an average elevation of 2500 feet, great heat and drought prevail in summer, and severe cold in winter. The mean annual isotherm of 60° passes E. and W. through the centre of the Peninsula. At Madrid, in the centre of the Peninsula, the mean annual temperature is 58°.2, the mean summer, 76°.4, and the mean winter, 43°.1. Here winter is the rainy season, when frosts are severe at night, the thermometer often sinking below 40°; while in summer it not unfrequently rises to 90°, and the total amount of annual rain does not exceed 10 inches. The most noxious winds are the *Solano*, a hot wind from the S., and the *Gallego*, a cold, piercing wind from the N.W. In the N.W., the climate is damp, the annual precipitation varying from 25 to 35 inches; but at Bilbao, it is said to exceed 100 inches. In the western provinces it is mild, but variable; in the S.W., almost African; and in the S.E. an almost perpetual spring prevails. The climate of PORTUGAL is generally healthy, especially in the elevated regions. Mean annual temperature at Lisbon, 61°.3; winter, 52°.4; and summer, 70°.9. Rain is very abundant on the west coast, especially in autumn, the tract extending from Coimbra to Mafra being the rainiest spot on the continent of Europe. Here 118 inches of rain fall annually. Snow is rare in the southern provinces of the kingdom.

Geology.—The western half of the Peninsula, from the Bay of Biscay to the Gaudalquivir, consists for the most part of Silurian strata, interspersed with extensive tracts of granite, especially in the north; another belt of Silurian rocks lines the coast from Gibraltar to Cartagena; and a third is found around Calatyud, between the sources of the Tagus and Douro. Upper Palæozoic beds prevail in the Pyrenees, and in a large tract S. and W. of Oviedo, between the sources of the Minho and Ebro. Secondary beds prevail along the north coast from Cape Peñas to St Sebastian; another broad tract extends in a S.E. direction from Burgos to Castellon-de-la-Plana; a similar belt along the heights which divide the waters of the Gaudalquivir from those flowing to the Mediterranean; and a fourth along the Atlantic, from Lisbon to near Ovar. Almost the entire remainder of Spain consists of tertiary formations, little of which is found in Portugal, except along the south bank of the Tagus from its mouth to Alcantara.

Minerals.—The mineral treasures of Spain are remarkable both for their variety and abundance, there being scarcely any important mineral substance that is not found in one or more localities. The principal mines presently wrought, however, are in the Pyrenees and their western continuation, and in the Sierra Morena. In the Pyrenees are found immense deposits of iron, copper, and lead; in the

Cantabrian Mountains, and recently in Majorca, valuable deposits of coal; tin, zinc, antimony, and arsenic, in many localities; silver near Guadalcanal, in Seville; rock-salt in Cordova; precious stones in many places; jasper, granite, alabaster, and beautifully variegated marble almost everywhere; while the quicksilver-mines of Almaden have been long celebrated. These precious "treasures of the low-lying deep," however, are sadly neglected; for in Spain all things are in a state of utter stagnation. The minerals of Portugal are almost as varied and valuable as those of Spain, and almost equally neglected. The principal mineral products that are in some measure wrought are iron, marble, and salt (from lagoons). Iron is very abundant; a small gold-mine is wrought at Setubal; there are only two coal-mines, one at Oporto and the other at Buarcos; tin, lead, and antimony are now wholly neglected.

Botany.—The indigenous vegetation of Spain and Portugal belongs exclusively to Schouw's third "Phyto-Geographical Region," described under "Europe" (p. 81). The number of indigenous plants in the whole Peninsula has not been ascertained; but Reuter collected 1250 species of flowering-plants in New Castile alone. According to Webb and Berthelot, 900 species of flowering-plants are found in the Canary Islands. The best building-timber grows on the north coast; the cork-tree, the Kermes oak, and the Sumach tree, farther south. Of food-plants, the vine, olive, orange, fig, citron, date, abound on the E. coast, together with carobs, or St John's bread, sweet potato, the sugar-cane, and the cotton-plant, along with pomegranates, figs, almonds, olives, in the S.; nuts, gooseberries, and orchard-fruits in the N. and N.W. In Portugal are found the vine, date, olive, orange, lemon, citron, the American aloe, rice, stone-pine, orchard-fruits, and water-melons.

Agriculture is in a very backward state in all parts of the Peninsula, though it forms the leading occupation of the people of both countries. The implements of husbandry are of the rudest description; the rotation of crops, and indeed all the modern improvements, are wholly unknown. Though the soil in many parts is extremely fertile, especially in Portugal and the south of Spain, only about a half of the surface is under cultivation. The principal objects of culture are grain crops of all kinds (including wheat, barley, maize, and rice); the vine, cotton, tobacco, mulberry-plant, sugar-cane, hemp, and flax. The corn-crop is generally sufficient for home consumption, and large quantities of wine and fruits are exported, those of Xeres (sherry), Malaga, and Oporto (port wine), being the most celebrated. The central plateau, especially in Castile and Leon, consists of pasture-ground, where vast numbers of merino sheep are reared for the sake of their valuable wool.

Zoology.—Of the 223 mammalia inhabiting Europe, 69 are found in the zoological province to which Spain belongs—a province conterminous with the phyto-geographical region above mentioned. Of the 490 European birds, 294 are found here; and of the 73 reptiles, 51 species. Of the 69 mammals, 42 species are carnivora, 16 rodents, and 9 ruminants; while of the two remaining, one is a quadrumanous animal—viz., the Barbary ape, which inhabits the rock of Gibraltar,

the only locality in Europe where quadrumana are found; and the other a pachyderm—viz., the *Sus scropha*, or wild-boar. The wolf, bear, chamois, and ibex, are found in the Pyrenees; the marten in Biscay; the chameleon near Cadiz; lynxes, foxes, wild-cats, and weasels, in numerous localities. The buffalo is the only bovine species, but there are three species of sheep, one of which (the merino) yields a great quantity of the finest wool, and is forbidden to be exported. This breed, however, is now largely reared in Saxony and other German States. Of the numerous birds, we can only mention the eagle, vulture and flamingo. Fish is not plentiful in the rivers, but abundant on the Atlantic coasts.

Ethnography.—The people of the Peninsula nearly all belong to the Greco-Latin variety of the great Caucasian race; but overrun as the country has been at different times by widely-different tribes, a considerable variety of race appears in the different provinces. The Iberians, and afterwards the Celts, were the earliest inhabitants, and Celtic blood still predominates both in Spain and Portugal. The south of Spain was colonised by the Phenicians and Carthaginians in the fourth century before our era; the Romans subdued the whole Peninsula, B.C. 206; the Vandals, Suevi, and afterwards the Visigoths, overran the country in the beginning of the fifth century; the Moors, or Saracens, drove the Goths to the northern mountains in A.D. 714, and for seven centuries thereafter retained possession of the centre and south, where they established several powerful kingdoms, but were finally expelled in 1492 by the Christians, under Ferdinand and Isabella. Notwithstanding this great intermixture of blood, four distinct families are still discernible—viz., the Spaniards proper, descended from the Celts, Phenicians, Romans, and Goths, constituting about nineteen-twentieths of the entire population; the Basques, in the north-west provinces, the descendants of the ancient Iberians; the Moors, in the south; and the Gypsies or Gitanos, probably of Hindu origin, numbering about 50,000, in various localities. The Jewish race was totally expelled in 1492.

Languages.—Notwithstanding the great extent of the Peninsula, the languages and dialects are comparatively few; and, with the exception of the *Basque*, whose relations are yet unknown, belong to the Greco-Latin family. The Spanish and Portuguese, both of them descendants of the ancient Galician, and for a long time mere dialects of the same language, have at length come to differ considerably. The *Spanish proper*, or *Castilian*, found in its greatest purity in Castile, is manifestly descended from the Latin, though with a considerable admixture of Gothic, and more especially of Arabic words. So conspicuous is the latter element, that some philologists reckon it as a sort of connecting-link between the Indo-European and Semitic stocks. In grammatical structure, however (the main element to be considered in determining the affinities of a language), as also in the great bulk of its roots, it bears little resemblance to the Arabic or any other Semitic tongue. In addition to the Peninsula, Spanish is spoken in Spanish America, the Philippine Islands, and other eastern posses-

sions of Spain. The *Catalan*, or *Catalonian*, a mere dialect of the Spanish, is spoken in the old provinces Catalonia and Valencia, and in the Balearic Isles. The *Portuguese* is spoken in Portugal, Madeira, the Azores, and Brazil. It is a twin sister of the Spanish, both being descended from the Latin, through the Galician; but it now exhibits so many peculiarities that the difference between the two languages is something more than dialectic. The Portuguese is less guttural, but harsher and more unpleasing in sound than the Spanish, and possesses a class of words which cannot be traced in the Spanish vocabulary, and which are supposed to have proceeded from dialects of the Berber language, which prevails in the north of Africa.

Religion and Education.—The Roman Catholic has for ages been almost the sole religion in either Spain or Portugal, though in the latter country a very limited amount of toleration has been enjoyed by the Jews and some Protestant denominations. In both countries, however, great changes have recently taken place in ecclesiastical affairs; and since the flight of Queen Isabella, in 1868, toleration has been freely accorded in Spain to all denominations. In both countries education is still in a lamentably deficient state, notwithstanding the marked progress which has recently taken place. In 1861 there were in Spain 58 public colleges for middle-class education, with 757 professors and 13,881 students, besides 22,060 common schools, attended by 1,046,558 pupils, being one-fifteenth part of the population. In Portugal education is entirely free from the control of the Church, and yet, with the exception of Russia and the Papal States, Portugal is the worst educated country in Europe, there being, in the year 1862, only 1 in every 36 persons able to read and write. The sole university is that of Coimbra, while in Spain there are no fewer than ten—the chief of which are those of Salamanca, Valencia, Zaragoza, and Valladolid.

Literature.—The most distinguished names in Spanish literature are the following:—POETRY: The author of "The Cid," who has been called "The Homer of Spain:" this, the oldest poem in the Spanish language, describes the adventures of *El Seid*, "the Lord" (a famous Castilian hero, born at Burgos in 1040), and was written about the middle of the twelfth century; Herrera, Ercilla, Lope de Vega, Calderon de la Barca, Garcilasso, Gomez de Quevedo. HISTORY: Mariana, author of 'The History of Spain;' Antonio de Solis, the historian of 'The Conquest of Mexico.' FINE ARTS: Ribera, Murillo, Morales, Fernandez, Ribalta, Velasquez, Henrique Marinas, Juan de Alfaro. FICTION: Cervantes, author of 'Don Quixote.' SACRED LITERATURE: Cardinal Ximenes, Isidore of Seville, Michael Servetus. MARITIME TRAVEL: Columbus (a Genoese), Pinzon, Ponce de Leon, Fernandez Cortez, Pizarro, Velasquez, Cordoba. The classic poets Lucan and Martial, and Seneca the philosopher, were natives of Spain, and probably Quintilian. Portugal can boast of few names that have won for themselves a European reputation. The most distinguished name in its literature is Camoens, author of 'The Lusiad;' next to Camoens may be placed

Gil Vicente and Saa de Miranda, the dramatists; Antonio Ferreyra, who has been called the Portuguese Horace; Rodriguez Lobo; and Joãs de Barros, an elegant prose writer. The names of Vasco de Gama, Magellan, Balbao, Cabral, and De Solis, are all celebrated in Portuguese maritime discovery.

National Character.—The Spaniards are grave, stately, and formal in their manners; frugal and temperate in diet; extremely indolent in disposition; of an enthusiastic temperament, which sometimes prompts them to acts of chivalry, but more frequently to the perpetration of revolting atrocities, especially when goaded on by the love of gain or by religious bigotry; in proof of which we need only refer to their inhuman treatment of the natives of America when that continent was discovered, and to the annals of the Inquisition, an infamous institution, which was first established at Seville in 1481, at the instance of Ferdinand, the husband of Isabella, and which reigned in all its terrors down to the present century. "The Spanish statistics of this infernal engine," says Milner, "which was only abolished in 1820, include 34,611 persons burned alive, 18,000 burned in effigy, and 288,109 consigned to the prisons and galleys." The Portuguese are represented as dignified, polite, and temperate, but excessively filthy, both in their houses and persons: they are further characterised by an inveterate dislike to Spaniards, whom, notwithstanding, they greatly resemble in manners and disposition. They are equally bigoted, cruel, and indolent; equally proud and revengeful; and equally fond of the barbarous amusement of bull-fighting; and whatever difference there may be is in favour of the Spaniards, there being no country in Europe where civilisation and morality are at a lower ebb than in Portugal.

Government and Finance.—The Government of Spain, after three and a half centuries of despotism, became, in 1845, a constitutional monarchy, under Queen Isabella II., who was aided in the government by the Cortes, composed of two co-operating bodies—viz., a Senate (the members of which were partly hereditary and partly nominated for life by the sovereign), and a Congress of Deputies elected by the people in the proportion of one deputy for every 35,000 inhabitants. After many years of misrule she was compelled to evacuate, and Amadeus, son of Victor Emanuel, was elected King. Leaving Spain in disgust, he was succeeded in 1875 by Alphonso XII., son of the deposed Queen Isabella. The army is formed on the French model. Its total strength in 1870 consisted of 80,000 men and officers. In the same year the navy consisted of 6 ironclad frigates, 1 ship of the line, and other 89 steam-ships (useless in modern warfare), carrying 1055 guns, and manned by 22,000 marines. In 1871 the revenue of Spain amounted to £27,900,000, the expenditure to about £32,820,000, and the public debt to £213,666,568. The Government of Portugal is a constitutional monarchy, reigning sovereign, Luis I., who succeeded his brother Don Pedro V. in 1861, of the Braganza-Coburg line. The Parliament or Cortes consists, as in Spain, of two chambers—a House of Peers nominated by the sovereign, and the House of Deputies elected by the people. In 1866 the army at home and abroad amounted to about 36,000 men and officers, and the navy to 34 ships of war, carrying 294 guns, and manned by 2832 marines.

In 1873-4 the revenue amounted to £5,147,458; expenditure, £5,423,779; public debt, £72,833,000.

Commerce.—Though few countries in Europe possess greater commercial facilities, on account of the great extent of seaboard, yet such is the natural indolence of the Spaniards that their commerce is quite inconsiderable; and the little that exists can be estimated with difficulty, owing to the universal practice of smuggling. The average value of exports for the last seven years has been £12,000,000, and of imports £19,000,000. The principal exports consisted of wine, silk, brandy, oil, fruits, iron, lead, mercury, salt, barilla, skins, cork, Spanish flies, liquorice, and dye-stuffs, which were, for the most part, sent to Great Britain and France. The countries from which Spain receives most are France and the United Kingdom. From the latter she received in 1873 to the value of £3,736,620; while in the same year Spain sent to Britain to the value of £10,973,000, one third of which consisted of wine. The chief seats of the wine manufacture are—Xeres (hence our *sherry*), Rota, near Cadiz, Montilla, Malaga, and Alicante, the last two of which are also famed for raisins. The province Valencia is especially famous for its great variety of wines, large quantities of the variety known as Benicarlo being exported to Bordeaux, where they are mixed with the wines of the Gironde to impart to them colour and flavour. Spain is the second silk-producing country in Europe (Italy being the first), and her best customer in this article is France. The articles imported from Britain are linen-yarn and linens, iron—both wrought and unwrought—and coal. Manufactures consist chiefly of swords at Toledo, cigars at Seville, leather at Cordova, cotton and silk stuffs in Catalonia, iron in the Basque provinces, and of gunpowder, cannon, porcelain, and glass. The commercial marine in 1872 amounted to 4326 vessels, carrying 360,000 tons. The principal ports are Barcelona, Cadiz, Malaga, Bilbao, Alicante, and Valencia. Since the loss of her colonial possessions, the commerce of Portugal has vastly decreased. Such commerce as exists is chiefly with England. Wine is pre-eminently the product of Portugal, and constitutes more than two-thirds of all her exports, which, in 1871, amounted to £5,250,000. In the same year her imports amounted to £6,790,000. Besides wine, the chief exports are fruits of the finest quality, salt, cattle, wool, cork, olive-oil, iron and copper pyrites, and elephants' teeth. In 1873 England imported of the red wines of Portugal 4,037,000 gallons. Next to England, Brazil, Russia, and the north of Europe are the principal consumers of port wine. The vine disease, which broke out in 1853, has continued more or less ever since, and has greatly diminished the quantity of wine exported. The imports consist chiefly of corn, rice, salted provisions, sugar, and coffee from Brazil; cotton and woollen goods, hardware, &c., from England; hemp, flax, and deals from the Baltic. The principal ports are Lisbon, Oporto, and Setubal.

Inland Communication.—*Railway* communication is progressing rapidly in Spain. The total number of miles open for traffic in 1873

was 3850. In Portugal, railways have been constructed from Lisbon to the Guadiana, by Abrantes and Elvas; another connects Lisbon with Beja; while a third proceeds from the capital to Coimbra and Oporto: total in 1873, 530 miles.

Canals.—The numerous mountain-ranges which traverse the country, and separate the principal river-basins, present insuperable obstacles to the junction of the rivers that flow into the Atlantic with those that discharge their waters into the Mediterranean; but several canals have been constructed along the banks of such rivers as are not navigable. The principal canals are the Imperial Canal, along the right bank of the Ebro; the canals of Castile, Manzanares, Murcia, Albacete, and Guadarama. There are no canals in Portugal, but the rivers of that country are more navigable than those of Spain.

Roads.—There are no good public roads in either country, except around Madrid; wheel-carriages are little used—the principal part of the transit trade being effected on the backs of mules.

Foreign Possessions.—Of the once magnificent colonies of Spain and Portugal the following are all that remain:—

Spanish.—Ceuta, Tetuan, &c., on the N. coast of Marocco; Fernando Po and Annabona, in the G. of Guinea; Cuba, Porto Rico, and Isle of Pines, in the W. Indies; part of the Philippine and Ladrone Islands, and nominally the Pelew and Caroline Isles, in Oceania. Total area, 190,000 sq. m., and population (in 1872), 8,093,000.

Portuguese.—Besides the Azores and Madeira (for which see page 183), to Portugal belong the Cape Verde Islands, portions of Senegambia, Angola, Benguelo, and St Thomas and Prince's Islands, on the W. coast of Africa, together with Sofala and Mozambique on the E. coast; Goa, Salsette, Diu, and Damaun, in Hindustan; Macao, in China; parts of Timor and Solor, in Malaysia. Total area, 1,135,000 sq. m.; pop. (in 1874), 3,250,140.

FRANCE.

Boundaries.—France, one of the largest and most important countries of Western Europe, is bounded on its six sides as follows:—N.W., the English Channel, separating it from Great Britain; W., the Atlantic; S.W., the Pyrenees, separating it from Spain; S.E., the Mediterranean; E., Italy, Switzerland, and Alsace, from which it is separated by the Alps, Mount Jura, and the Vosges; N.E., the German portion of Lorraine, and Belgium. Lat. 42° 20′—51° 6′ N.; lon. 4° 43′ W.—7° 30′ E.

Chateauroux, capital of Indre, near the centre of the empire (lat. 46° 50′, lon. 1° 41′ E.), is nearly on the same parallel as Berne, Grätz, Odessa, Astrakhan, Lake Balkash, the N. extremity of Japan, mouth of the Oregon, the S. shore of

Lake Superior, and Quebec; and nearly on the same meridian as Yarmouth, Calais, Barcelona, Algiers, and the capital of Dahomey. The form of the country is hexagonal and very compact; greatest length from the W. coast of Finistère to Nice on the Italian frontier, nearly 700 miles; extreme breadth, from Givet in Ardennes to the mouth of the Bidassoa, 585 miles; coast generally low, but bold and irregular in the north-west, with an extreme length, including the larger sinuosities, of 1500 miles. This is a small extent of seaboard for so large a country, but the numerous navigable rivers, and the canals connecting them, make ample compensation for the deficiency.

Area and Population.—Omitting the three departments, Haut Rhin, Bas Rhin, and Moselle, now ceded to Germany (and named Elsass-Lothringen), but including Corsica, the area amounts to 201,900 sq. m., or 1¾ times the size of the British Isles; while, in 1872, the population was estimated at 36,102,921, or one-fifth more than that of the United Kingdom, giving 178 persons to each sq. mile. While the population of the British Isles has more than doubled itself since the French Revolution, that of France has only increased 44 per cent, and has required above a century and a half to double itself. This remarkable fact is mainly owing to war, political proscription, bad harvests, the grape-blight, disease of the silk-worm, and other causes; indeed, every natural or political calamity checks the increase of population in France in a marked degree. The rural population is constantly decreasing, and that of the large towns increasing. The north of France is more populous than the south, and contains a greater number of large towns. The most densely peopled department is that which contains the capital. The three departments ceded to Germany in 1871 contained an area of about 5580 square miles, and a population of 1,964,173.

Political Divisions.—France was formerly divided into 34 provinces; but in 1789, when the love of change became paramount, the provinces were divided into 85 departments, or 86 including Corsica. In 1860, three departments (Savoie, Haut Savoie, and Nice) were ceded to France by Italy; but in 1871 France was obliged to cede to Germany the other three departments above named; so that the number still continues to be the same as in 1789. Though the provinces are no longer recognised in legal documents, they are still familiar among the French people, and they are so frequently referred to in history that we think it necessary to append, at the foot, the following table (arranged in alphabetical order), showing their former capitals, and the departments which now correspond to them.* The

* Old Provinces of France.

Old Provinces.	Old Capitals.	Corresponding Departments.
Alsace	Strasbourg	Haut Rhin, Bas Rhin.
Angoumois	Angoulême	Charente.
Anjou	Angers	Maine-et-Loire.
Artois	Arras	E. part of Pas-de-Calais.
Aunis	Rochelle	N.W. of Charente Inférieure.

departments are named after the most important physical features which respectively characterise them—as the existence of a large river, the confluence of two rivers, or proximity to some mountain-chain. The departments are of much more uniform dimensions than the old provinces, or than the counties of Great Britain; their average size being 2400 sq. miles, or something less than Perthshire. But the department Gironde is larger than the largest of our Scottish counties (Inverness); while that of Seine, which contains the capital, and which is the smallest department in France, is larger than Rutland, the smallest county in England. As the departments are so numerous, they must be arranged in a simple and methodical manner; and this is best done by dividing them into six frontier groups, corresponding with the six sides of the kingdom, together with a larger central group. Then the 85 Continental departments can be easily remembered as follows:—14 north-western, 10 western, 14 southern, 7 south-eastern, 10 eastern, 9 north-eastern, and 21

Old Provinces.	Old Capitals.	Corresponding Departments.
Auvergne	Clermont	Puy-de-Dôme, Cantal.
Avignon	Avignon	W. of Vaucluse.
Béarn	Pau	Basses Pyrénées.
Berry	Bourges	Cher, Indre.
Bourbonnais	Moulins	Allier.
Bourgogne	Dijon	Ain, Côte-d'Or, Saône-et-Loire, Yonne.
Bretagne	Rennes	Côtes-du-Nord, Finistère, Ille-et-Vilaine, Loire Inférieure, Morbihan.
Champagne	Troyes	Ardennes, Aube, Marne, Haute Marne.
Dauphiné	Grenoble	Hautes Alpes, Drôme, Isère.
Flandre	Lille	Nord.
Foix	Foix	Ariège.
Franche Comté	Besançon	Doubs, Jura, Haute Saône.
Gascogne, Guyenne	Auch, Bordeaux	Aveyron, Dordogne, Gers, Gironde, Lot, Lot-et-Garonne, Landes, Hautes Pyrénées, Tarn-et-Garonne.
Ile de France	Paris	Oise, Seine, Seine-et-Oise, Seine-et-Marne, S. of Aisne.
Languedoc	Toulouse	Ardèche, Aude, Gard, Hérault, Haute Garonne, Haute Loire, Lozère, Tarn.
Limousin	Limoges	Corrèze, S. of Haute Vienne.
Lorraine	Nancy	Meurthe, Meuse, Moselle, Vosges.
Lyonnais	Lyon	Loire, Rhone.
Maine	Le Mans	Mayenne, Sarthe.
Marche	Gueret	Creuse, N. of Haute Vienne.
Nivernais	Nevers	Nièvre.
Normandy	Rouen	Calvados, Eure, Manche, Orne, Seine Inférieure.
Orléanais	Orléans	Eure-et-Loire, Loiret, Loire-et-Cher.
Picardy	Amiens	Somme, E. of Pas-de-Calais, N. of Aisne.
Poitou	Poitiers	Deux Sèvres, Vendée, Vienne.
Provence	Aix	Basses Alpes, Bouches-du-Rhône, Var, E. of Vaucluse.
Roussillon	Perpignan	Pyrénées Orientales.
Saintonge	Saintes	E. of Charente Inférieure.
Touraine	Tours	Indre-et-Loire.

Central departments. In the six frontier groups the departments are taken *two deep* from the sea or other boundary.

Fourteen North-Western Departments.

Nord.*—Lille 158, Wattrelos 12, Roubaix 65 n., Tourcoing 38 n. (Deule), Armentières 12, Halluin 11, Bailleul 10 n. (Lys), Valenciennes 24, Cambrai 22 (Scheldt), St Amand-les-eaux 10, Douay 24 (Scarpe), Maubeuge 10 (Sambre), Dunkerque 33 (Str. of Dover).

Towns between 5000 *and* 10,000 *inhabitants.*—Estaire, Merville, Hazebrouck, Condé, Anzin, Solesmes, Le Cateau, Bergues, Gravelines, Commines.

Pas-de-Calais.—Arras 26 (Scarpe), St Omer 22 (Aa), Calais 13, St Pierre 15 (Str. of Dover), Boulogne 40 (English Channel).

Aire, Carvin-Epinoy, Bethune, Agincourt.

Somme.—Amiens 64, Abbeville 20 (Somme), Cressy 2 (Maye).

Oise.—Beauvais 15 (Terrein), Compiègne 12 (Oise).

Noyon, Senlis, Clermont.

Seine Inferieure.—Rouen 101, Le Havre 75, Elbeuf 22 (Seine), Bolbec 10 (Bolbec), Dieppe 20 (Arques), Fecamp 12 (N. coast).

Caudebec-les-Elbeuf, Darnetal, Yvetot, St Valery-en-Caux, Sottevilla.

Eure.—Evreux 12 (Iton), Louviers 11 (Eure).

Andeleys, Vernon, Pont-Audemer, Bernay.

Eure-et-Loir.—Chartres 20 (Eure).

Dreux, Nogent-le-Rotrou, Chateaudun.

Calvados.—Caen 42 (Orne), Lisieux 13 (Touques).

Falaise, Bayeux, Vire, Honfleur.

Orne.—Alençon 16 (Sarthe), Flers 10 (Vere).

L'Aigle, Argentan, Seez, La Ferte Macé.

Manche.—St Lo 10 (Vire), Cherbourg 37 (Divette), Granville 17 (W. coast).

Valognes, Coutances, Avranches.

Mayenne.—Laval 27, Mayenne 10 (Mayenne).

Chateau-Gontier, Ernée.

* Instead of giving the pronunciation of the different French words as they occur, it seems preferable to advance a few general rules:—

a has two sounds, as in mam-ma; *ai*, *ei* = *è* grave, or *e* in there; *au* = *ô*.

e when unaccented is silent; *é* with the *acute accent*, like the shut sound of *e* in English, as in *bed:* it has the same sound when followed by a silent *r* or *z* at the end of a word; *è*, with the *grave accent*, and *ê circumflex* = *e* in *there*.

eu, the same as *ö* in German, or *ao* in the Irish and Scottish Gaelic: as Eure, Evreux. *eau* and *eaux* = long *ô* in English, as Chateau, Bordeaux (*Sha-tō'*, *Bor'dō*).

ou = *oo* in mood, or *u* in rule; as Angoulême (*An-goo-laim'*).

ç with a *cedilla*, used only before *g*, *o*, *u*, = *s* in English: as Alençon (*-song*).

ch = English *sh:* as Rochelle, Chartres (*Ro-shel'*, *Shar'tr*).

g before *e*, *i*, and *y*, and *j* = *s* or *z* in *treasure*—thus Ariège, Jura (*Ar-ri-aizh'*, *Zhu'ra*).

gn = *n* or *ni* in Spaniard: as Avignon, Boulogne (*Av-in'yong*, *Boo-loing'*).

d, *s*, *t*, *x*, *z*, are silent at the end of words: as Nord, Nîmes, Lot, Bordeaux, Rhodez (*Nôr*, *Neem*, *Lō*, *Bordō*, *Rhodā*).

an, *en*, *in*, *on*, have no representative in English, and must be acquired from the teacher: they are strictly nasal sounds, faintly resembling *ang*, *eng*, *ing*, and *ong* in English.

u = Fr. *u* in *plus*, *bruler;* it approximates to Scotch *u* in *gude*, *schule;* but has no corresponding sound in English. *ui* and *uy* = English *we*, as Puy-de-Dôme (*Pwee-de-Dōme*).

Ille-et-Vilaine.—RENNES 52 (Vilaine), St Servan 13 (Rance).
Fougères, Cancale, Redon, Vitre, Fougeray, Combourg, St Malo.
Côtes-du-Nord.—ST BRIEUC 15 (Gouet).
Dinan, Guingamp, Plouha, Lannion, Plouaret.
Finistère.—QUIMPER 11 (Odet), Morlaix 14 (Relec), Brest 80 (Elorn).
Plougastel, Landerneau, Lambezellec, Crozon, Quimperlé.

TEN WESTERN DEPARTMENTS.

Morbihan.—VANNES 15 (G. of Morbihan), L'Orient 38 (Blavet).
Pontivy, Baud, Sarzeau, Ploermel, Plocmeur.
Loire Inférieure.—NANTES 112, St Nazaire 11 (Loire).
Blain, Montoir, Vertou, Vallet.
Maine-et-Loire.—ANGERS 55 (confluence of Sarthe and Mayenne), Saumur 14 (Loire), Chollet 13 (Maine), Chalonnes 6 (Lagon).
Vendée.—NAPOLÉON-VENDÉE or BOURBON-VENDÉE 8 (Yon).
Sables d'Olonne, Noirmoutier, Fontenay, Luçon.
Deux Sèvres.—NIORT 21 (Sèvre Niortaise), Parthenay 5 (Thone).
Charente Inférieure.—LA ROCHELLE 19 (N. coast), Rochefort 30, Saintes 11 (Charente), St Jean d'Angely 6 (Boutonne).
Charente.—ANGOULÊME 25, Cognac 8 (Charente).
Gironde.—BORDEAUX 194 (Garonne), Libourne 12 (Dordogne).
Dordogne.—PERIGUEUX 20 (Isle), Bergerac 12 (Dordogne).
Sarlat.
Lot-et-Garonne.—AGEN 17 (Garonne), Villeneuve d'Agen 14 (Lot).
Marmande, Tonneins, Nerac.

FOURTEEN SOUTHERN DEPARTMENTS.

Landes.—MONT-DE-MARSAN 5 (Midouze), Dax 10 (Adour).
Basses Pyrénées.—PAU 25 (Gave de Pau), Bayonne 26 (Adour).
Orthez, Olorn.
Hautes Pyrénées.—TARBES 15, Bagnères 9 (Adour).
Gers.—AUCH 12, Lectoure 9 (Gers), Condom 9 (Bayse).
Haute Garonne.—TOULOUSE 124 (Garonne).
St Gaudens, Revel, Villemur.
Tarn-et-Garonne.—MONTAUBAN 26, Castel-Sarrasin 7 (Garonne), Moissac 10 (Tarn).
Ariège.—FOIX 6, Pamiers 8 (Ariège).
Pyrénées Orientales.—PERPIGNAN 25 (Tet).
Aude.—CARCASSONNE 22, Narbonne 16 (Aude).
Limoux, Castelnaudary.
Tarn.—ALBY 15 (Tarn), Castres 21 (Agout), Mazamet 11 (Arnette).
Rabastens, Gaillac, Lavaur, Graulhet, Puylaurens.
Hérault.—MONTPELLIER 56 (Lez), Béziers 28, Bédarieux 10 (Orbe). Lodeve 12 (Lergue), Cette 24 (coast).
St Pons, Agde, Pezenas, Clermont, Meze, Lunel.
Lozère.—MENDE 6 (Lot).
Gard.—NIMES 60 (Vistre), Beaucaire 10, Alais 20 (Gardon).
St Gilles, Le Pont St Esprit, Uzès, Anduze, Le Vigan.
Ardèche.—PRIVAS 7 (Ouvese), Annonay 16 (Cance).
Tournon, Aubenas.

Seven South-Eastern Departments.

Bouches-du-Rhone.—Marseille 312 (Verne), Arles 26, Tarascon 13 (Rhone), Aix 28 (Arc).
St Remy, Salon, Martigues, Aubany, Auriol, La Ciotat.

Vaucluse.—Avignon 36 (Rhone), Carpentras 11 (Auzon), Orange 10 (Aigues).
L'Isle, Cavaillon, Apt.

Var.—Draguignan 10 (Artuby), Toulon 69, La Seyne 12 (const.), Hières 10 (Gapeau), Brignoles 6 (Calami).

Alpes Maritimes.—Nice 50 (Paglione), Grass 11 (Esteron).
Cannes, Antibes, Mentone.

Basses Alpes.—Digne 7 (Bleone), Manosque 6 (Durance).

Hautes Alpes.—Gap 8 (Lure), Briançon 5 (Durance).

Drome.—Valence 20, Montelimar 12 (Rhone), Romans 11 (Isère), Crest 5 (Drome).

Twelve Eastern Departments.

Haute Savoie.—Annecy 11 (Fieran).

Savoie.—Chambery 19 (Leisse, *aff.* Savière).

Isère.—Grenoble 40 (Isère), Vienne 25 (Rhone), Voiron 10 (Morge.)

Rhone.—Lyon 324 (Rhone), Villefranche 12 (Saône), Tarare 15 (Tardine).

Ain.—Bourg 14 (Reyssouse).

Saône-et-Loire.—Macon 18, Chalons 17, Tournus 6 (Saône), Le Creuzot 24 n., Autun 12 (Arroux).

Jura.—Lons-le-Saulnier 10 (Vaillère), Dole 11 (Doubs).
Arbois, Poligny, Salins, St Claude.

Doubs.—Besançon 47, Montbeliard 6, Pontarlier 5 (Doubs).

Haute Saône.—Vesoul 8 (Drejon), Gray 6 (Saône).

Vosges.—Epinal 12 (Moselle), St Diey 10 (Meurthe).
Mirecourt, Remiremont, Gerardmer.

*Haut Rhin.—Colmar 24 (Lauch), Mulhausen 59 (Ill), St Marieaux-Mines 12 (Liepvrette), Guebwiller 11 (Lauch).
Belfort, Thann.

*Bas Rhin.—Strasbourg 84 (Rhine), Haguenau 11 (Moder).
Saverne, Bischwiller, Schelestadt.

Ten North-Eastern Departments.

*Moselle.—Metz 55 (Moselle and Seille).
Thionville, Sarreguemines.

Meurthe.—Nancy 50 (Moselle), Lunéville 16 (Meurthe).
Pont-à-Mousson, Toul.

Meuse.—Bar-le-Duc 15 (Ornain), Verdun 12, St Mihiel 5 (Meuse).

Haute Marne.—Chaumont 7, St Dizier 8, Langres 10 (Marne).

Marne.—Chalons 17, Vitry 8, Epernay 11 (Marne), Reims 71, (Vêle).

Ardennes.—Mezieres 6, Charleville 10, Sedan 16 (Meuse).
Givet, Rethel.

* Ceded to Germany in 1871, and named Elsass-Lothringen.

Aisne.—LAON 10 (Delette), St Quentin 33 (Somme), Soissons 10 (Aisne). Chauny, Chateau-Thierry.

Seine-et-Marne.—MELUN 11, Fontainebleau 12 Montereau 6 (Seine), Meaux 11 (Marne), Provins 8 (Vouzie).

Seine-et-Oise.—VERSAILLES 61, St Germain-en-Laye 16 (Seine). Sèvres, Corbeil, Pontoise, Etampes, St Cloud.

Seine.—PARIS 1852, St Denis 26, Vincennes 14, Boulogne 14, Gentilly 9 (Seine).

TWENTY-ONE CENTRAL DEPARTMENTS.

Sarthe.—LE MANS 45 (Sarthe). Sable, La Flèche, Mamers.

Indre-et-Loire.—TOURS 42 (Loire), Chinon 7 (Vienne).

Loir-et-Cher.—BLOIS 20 (Loire), Vendôme 9 (Loir), Romorantin 7 (Sandre).

Loiret.—ORLEANS 49, Beaugency 5, Gien 7 (Loire), Montargis 9 (Loing).

Yonne.—AUXERRE 15, Sens 11 (Yonne). Villeneuve-le-Roi, Joigny, Tonnerre.

Aube.—TROYES 36 (Seine).

Vienne.—POITIERS 31 (Clain), Chatellerault 14 (Vienne). Montmorillon.

Indre.—CHATEAUROUX 16 (Indre), Issoudun 14 (Theols). Buzançais, La Châtre, Le Blanc.

Cher.—BOURGES 30 (Auron), Vierzon 8, St Amand 8 (Cher).

Nièvre.—NEVERS 21 (Loire). Cosne, La Charité, Clamecy.

Côte-d'Or.—DIJON 39 (Ouche), Beaune 11 (Bouzoire), Auxonne 7 (Saône).

Haute Vienne.—LIMOGES 53 (Vienne). St Junieu, St Leonard, St Yrieix.

Creuse.—GUERET 4, Aubusson 6 (Creuse).

Allier.—MOULINS 18 (Allier), Montluçon 16 (Cher). St Pourçain, Gannat, Cusset.

Corrèze.—TULLE 12, Brives 10 (Corrèze, Ussel 11 (Diege).

Puy-de-Dôme.—CLERMONT-FERRAND 38 n., Issoire 6 (Allier), Riom 11 (Ambene), Thiers 16 (Dore), Ambert 8 (Dore).

Loire.—MONTBRISON 7 n., Roanne 17 (Loire), St Etienne 110 (Furens), Rive-de-Gier 14, St Chamond 12 (Gier).

Lot.—CAHORS 14 (Lot), Gourdon 5 (Ceon), Figeac 8 (Celle).

Cantal.—AURILLAC 11 (Cere), St Flour 5 n. (Trueyn).

Haute Loire.—LE PUY 17 (Loire), Yssingeaux 8, Tence 6 (Lignon).

Aveyron.—RHODEZ 12, Villefranche 10 (Aveyron), Milhau 13 (Tarn), St Afrique 7 (Sorgue).

Corsica.—AJACCIO 14 (W. coast), Bastia 19 (N.E. coast).

Descriptive Notes.—France, including Corsica, contained (by the census of May 1872) nine cities of above 100,000 inhabitants—viz., Paris, Lyon, Marseille, Bordeaux, Lille, Toulouse, Nantes, St Etienne, Rouen; fourteen between 100,000 and 50,000—viz., Le Havre,

Roubaix, Reims, Toulon, Brest, Amiens, Nîmes, Versailles, Angers, Montpellier, Limoges, Nancy, Nice, Rennes; and fifty between 50,000 and 20,000.

NORTH-WEST DEPARTMENTS.—These are by far the most populous, having two cities (Lille, Rouen) above 100,000; four between 100,000 and 50,000 (Brest, Le Havre, Roubaix, Amiens); sixteen between 50,000 and 20,000; and twenty between 20,000 and 10,000. **Lille**, a very strongly fortified city on the Belgian frontier, and Vauban's masterpiece, is one of the chief seats of the cotton, linen, and woollen manufactures. **Roubaix, Tourcoing,** and **Bailleul**, important manufacturing towns. **Valenciennes**, a strongly-fortified manufacturing town, famous for its lace, and the birthplace of Froissart in 1337. **Cambrai**, the see of Archbp. Fénélon, has been long famous for its *cambrics*. **Douay**, noted as the place from which was issued the only English version of the Scriptures received by the Roman Catholic Church. **Dunkerque**, a strongly-fortified seaport, and the most northerly town in France. **Arras, St Omer, Calais,** and **Boulogne**, are all strongly fortified, and engaged in various manufactures; the infamous Robespierre was a native of Arras; and at Boulogne, Napoleon I. assembled his flotilla for the invasion of England in 1804. **Calais** is the nearest city in France to the English shores, and is celebrated in the wars between the two countries; and **Boulogne** is the residence of many English families. **Agincourt**, famous for the great victory obtained by Henry V. over a greatly superior French force in 1415. **Amiens**, the birthplace of Peter the Hermit, Du Cange, and Delambre: here was signed the treaty of peace between Britain and France in 1802. **Abbeville**, an important stronghold fortified by Vauban, with numerous manufactures. **Cressy**, famous for the victory obtained by Edward III. over the French in 1346. **Rouen**, one of the most populous and flourishing cities in the north of France, celebrated for spinning and dyeing woollen and cotton stuffs; has a magnificent Gothic cathedral built by William the Conqueror, and a statue of the celebrated Joan of Arc, who was burnt to death here in 1431. **Le Havre** and **Rouen** are the two great seaports of Paris, with which they are connected by the Seine and by railway. **Elbeuf** is one of the chief seats of the woollen manufacture. **Dieppe** is the packet station to Brighton. **Beauvais**, famous for its cloth and tapestry. **Compiègne**, where the Maid of Orleans was taken prisoner by the English in 1431. **Noyon**, the birthplace of John Calvin, in 1509. **Evreux** has one of the finest cathedrals in France. **Chartres**, once the capital of Celtic Gaul, is the centre of a great corn trade. **Caen**, a large manufacturing town, famous for its lace, contains the tomb of William the Conqueror. **Alençon**, celebrated for lace and for crystal diamonds. **Cherbourg**, the Sebastopol of France, and one of her principal naval stations, situated at the northern extremity of the peninsula of Cotentin, within sight of the English coast; the works, long in progress, and now mounting 3000 guns, were formally opened on the 4th August 1858 by Napoleon III., in presence of Queen Victoria and a powerful English fleet. **Rennes**, the ancient capital of Brittany. **St Brieuc**, extensively engaged in the Newfoundland cod-fishery. **Quimper**, with a large pilchard-fishery. **Brest**, a first-class military port, and the principal station of the French navy, is strongly fortified and difficult of access.

WESTERN DEPARTMENTS.—These contain only two cities of more than 100,000 inhabitants (Bordeaux, Nantes); one between 100,000 and 50,000 (Angers); six between 50,000 and 20,000 (L'Orient, Rochefort, Angou-

lême, Niort, Perigueux; and twelve between 20,000 and 10,000. **L'Orient**, a military seaport, and one of the five principal stations of the French navy, with extensive shipbuilding. **Nantes**, one of the largest and most commercial cities in the west of France, with extensive shipbuilding docks: here was issued the famous Edict of Nantes, granting important privileges to the French Protestants, in 1598. **Angers**, the former capital of Anjou, with various manufactures, and extensive slate-quarries in the neighbourhood. **Saumur**, a stronghold of the French Protestants in the sixteenth century, is celebrated for its cavalry school. **Niort**, a thriving commercial and manufacturing town. **La Rochelle**, memorable for the siege which the Huguenots sustained against Louis XIII. in 1628, is a strongly-fortified seaport town. **Rochefort**, an important naval station fortified by Vauban, is a first-class military port. **Angouleme**, the former capital of Angoumois, has extensive trade, and is the birthplace of Montalembert, Balzac, and Margaret de Valois. **Cognac**, famous for its brandy, which is largely exported. **Bordeaux**, the ancient cap. of Guyenne, and the largest and most important city in the west of France, and its third commercial port, is the great emporium of the wine trade, and one of the principal seats of its foreign commerce. **Agen**, with a trade in prunes, is an entrepôt for the trade between Bordeaux and Toulouse.

THE SOUTHERN DEPARTMENTS have one town (Toulouse) above 100,000 inhabitants; two (Nîmes, Montpellier) between 100,000 and 50,000; nine (Baziers, Montauban, Bayonne, Pau, Perpignan, Cette, Carcassonne, Castres, Alais) between 50,000 and 20,000; and ten between 20,000 and 10,000. **Pau**, the capital of the old province of Béarn, is the birthplace of Henry IV., of Gaston de Foix, and of General Bernadotte, afterwards King of Sweden. **Bayonne**, a strongly-fortified seaport, in the extreme south-west of the kingdom, carries on an important trade with Spain, of which it forms the key; the *bayonet* was invented here. **Toulouse**, the most important and populous city in the entire south of France, was the capital of Languedoc; it is a sort of southern capital for literature and science, and contains the principal cannon-foundry in France: near it took place a sanguinary battle in 1814 between Wellington and Marshal Soult. **Perpignan**, the former capital of Roussillon, and an important military stronghold, has an extensive commerce in wines, wool, silk, iron, and corks. **Carcassonne** maintains an active trade in brandy. **Narbonne**, a very ancient city, founded by the first Roman colony sent into Gaul, was the residence of several Saracen kings in the middle ages: it is now celebrated for its honey. **Alby**: it was from this town that the Albigenses of the middle ages, who were so cruelly persecuted by the Church of Rome for their zealous maintenance of Gospel truth, derived their name. **Castres**, a place of great trade, manufactures, and mining operations, was one of the first cities in France that embraced the doctrines of Calvin—the birthplace of Dacier and Rapin. **Montauban** a large, well-built town, with several manufactures, and the seat of a Protestant theological seminary. **Montpellier**, one of the finest cities in the S.E. of France, with many literary and scientific institutions, is much frequented by invalids: it was an independent republic during the middle ages. **Beziers**, a fine town built on a hill, near the Orbe, suffered much during the crusade against the Albigenses in the thirteenth century. **Cette**, a fortified seaport town, at the entrance of the Canal du Midi. **Nimes**, a large, thriving, commercial city, with numerous manufactures of silk, cotton, and woollen goods, is the birthplace of Nicot, who introduced tobacco into France. **Beaucaire** has an immense annual fair,

where all kinds of merchandise may be found, and is frequented by merchants from all parts of Europe and Asia.

SOUTH-EASTERN DEPARTMENTS.—These contain one city (Marseille) above 100,000 inhabitants; two between 100,000 and 50,000 (Toulon, Nice); four between 50,000 and 20,000 (Avignon, Aix, Arles, Valence); and nine between 20,000 and 10,000. **Marseille** (Massilia), the most ancient city in France, having been founded by Greek colonists B.C. 600; and the third in France in regard to population: its commerce, which chiefly consists of wines and fruits, extends to all parts of the world. **Arles**, the ancient capital of Gaul, and afterwards of the kingdom of Provence, has been the seat of 13 ecclesiastical councils. **Avignon**, a flourishing manufacturing town, surrounded by plantations of mulberry-trees, was the residence of the Roman pontiffs during the seventy years of their "Babylonish captivity" (A.D. 1308-1377). **Orange** was the capital of an ancient principality of same name, which William of Nassau, the founder of the Dutch Republic, inherited; hence the King of the Netherlands is still Prince of Orange. **Toulon**, a first-class war-port, and the great naval station of the south of France: here Napoleon I. commenced his military career, during the memorable siege of 1793. **Nice**, originally a Greek colony from Massilia (*Marseille*), is celebrated as one of the earliest seats of Christianity in Europe: along with its territory, it was transferred by Sardinia to France in 1860: together with **Cannes** and **Mentone**, in the same department, it is much frequented by invalids from England and other countries. **Briançon**, the principal arsenal of the French Alps, is the most elevated town in Europe, being 4283 feet above the sea. **Valence**, noted for its cotton-printing and manufacture of silk goods.

EASTERN DEPARTMENTS.—The eastern departments contained one city (Lyon) of above 100,000 inhabitants; two between 100,000 and 50,000 (Strasbourg, Mulhausen); five between 50,000 and 20,000 (Besançon, Grenoble, Vienne, Le Creuzot, Colmar); and thirteen between 20,000 and 10,000. **Annecy**, capital of Upper Savoy, annexed to France by Sardinia in 1860. **Chambery**, cap. of department Savoie, also annexed to France in 1860, has a brisk trade in metals and wines. **Gremoble**, an impregnable stronghold on the Isere, formerly the capital of Dauphiné, was the first large town that opened its gates to Napoleon in 1815. **Vienne**, a thriving town, with lead and silver mines in the vicinity. **Lyon** (Lugdunum), at the confluence of the Rhone and Saône, is the second city in France in regard to population and commercial importance, and the first in manufacturing industry: it was founded by the proconsul Plancus, B.C. 43; became the capital of Roman Gaul, of the kingdom of Burgundy, and afterwards of the province Lyonnais; has numerous manufactures—that of silk being the most celebrated; and contains the finest provincial library in France: was the birthplace of Germanicus, of the emperors C. Aurelius and Caracalla, of the botanist Jussieu, of Jacquard and Camille Jourdan. **Macon**, the centre of an extensive wine-trade. **Chalons-sur-Saône**, at the head of the Canal-du-Centre, carries on an extensive inland trade. **Lons-le-Saulnier**, so named from its famous saline spring, which yields annually 20,000 quintals of salt. **Besançon**, a strongly-fortified city on the Doubs, celebrated for its clocks and watches. **Colmar** and **Mulhausen**, extensively engaged in cotton manufactures, now belong to Germany. **Strasbourg**, at one time a free imperial city of Germany, became subject to France in 1681, and then became the capital of Alsace. In 1870 it was compelled to capitulate to the German army under General von Werder. It is now

the capital of the German province Elsass-Lothringen is very strongly fortified, and contains a celebrated cathedral (founded in 504, but not finished till the fifteenth century), with a spire 466 feet high, which contains a remarkable astronomical clock, representing the movements of the planets in the solar system.

NORTH-EASTERN DEPARTMENTS. — These contain no town above 100,000 except Paris, which in 1872 had 1,852,000 inhabitants; three between 100,000 and 50,000 (Reims, Versailles, Nancy); two between 50,000 and 20,000 (St Quentin and St Dennis); and sixteen between 20,000 and 10,000. **Metz**, a very strongly fortified city, near the Belgian frontier, was compelled to capitulate to the Germans, Oct. 27, 1870, when 3 marshals of France, 6,000 officers, and 173,000 men were made prisoners. **Nancy** has extensive manufactures of cloth and embroidered muslin. **Luneville**, noted for the treaty executed here in 1801 between the Emperor of Germany and the first Napoleon. **Reims**, the principal seat of the woollen manufacture, is renowned in history for the maintenance of its liberties against the bishops in the Middle Ages: many ecclesiastical councils were held here, and in its colossal cathedral many of the kings of France were crowned. **Sedan** will be ever memorable as the scene of the terrible humiliation of France (Sept. 2, 1870), when Napoleon III., Marshal Macmahon, 39 generals, and 100,000 men surrendered to the King of Prussia. **Fontainebleau**, where Napoleon I. signed his abdication, was long the favourite residence of the kings of France. **Versailles**, famous for its magnificent royal palace, one of the most gorgeous in the world: many famous treaties were signed here, at one of which, in 1783, England recognised the independence of the United States of America. **Paris**, the capital of France, and the second largest city in Europe, is situated on both banks of the Seine, about 100 miles from its mouth. Less than half the size of London, it far surpasses the latter in magnificence, and is regarded by all as the most splendid city in Europe. It is surrounded by a fortified wall 21 miles in length, and a series of forts, erected by Louis Philippe at an enormous expense; and is adorned by sumptuous palaces, magnificent churches, and other public buildings, by fountains, gardens, triumphal arches, and columns. The University has twenty-eight professors, and the National Library contains 1,400,000 printed works and pamphlets, besides 125,000 MS. volumes. After a protracted siege (commencing Aug. 7, 1870), during which the Parisians suffered horrible privations, the city was compelled to surrender to the Germans.

THE TWENTY-ONE CENTRAL DEPARTMENTS contain one town (St Etienne) with more than 100,000; one between 100,000 and 50,000 (Limoges); ten between 50,000 and 20,000 (Orleans, Ze Mans, Tour, Dijon, Clermont-Ferrand, Troyes, Poitiers, Bourges, Nevers, Blois); and twenty-two between 20,000 and 10,000. **Le Mans**, with a brisk trade in grain and various manufactures. **Tours**, the former capital of Touraine, at the confluence of the Loire and Cher, with silk manufactures, and numerous schools and learned societies. **Blois**, with great trade in Orléans brandy. **Orléans**, the former capital of Orléannais, and at one time the capital of the kingdom of Burgundy, was besieged by the English in 1428, and delivered by the celebrated Joan of Arc, hence called "The Maid of Orléans." **Troyes**, the former capital of Champagne, is the centre of several important manufactures: here a treaty was concluded in 1420, conferring the crown of France on the King of England. **Poitiers**, formerly capital of Poitou, was in the possession of England for three centuries. **Chateauroux** has extensive manufactures of cloth, cutlery, hats, &c. **Bourges**, former capital of Berry, contains one of the

finest Gothic cathedrals in Europe. **Nevers**, former capital of Nivernais, has important manufactures of iron and steel goods. **Dijon**, the principal market for the sale of Burgundy wines, was formerly the capital of Bourgogne. **Limoges**, the former capital of Limousin, noted for its horse-races and its woollen manufactures. **Moulins**, formerly capital of Bourbonnais, with tanneries and manufactures of cutlery. **Tulle**, contains a national factory of firearms. **Clermont-Ferrand**, near the lofty mountain Puy-de-Dôme, and in the centre of a volcanic region. **Riom**, noted for being paved with basalt and lava quarried in the neighbourhood. **St Etienne**, a large thriving city, surrounded by coal-mines, and containing an active industrious population, who are largely engaged in the manufacture of firearms and iron-ware. **Cahors** carries on a large trade in tobacco and red wines. **Le Puy** is celebrated for its cathedral, containing a small image of the Virgin, which the inhabitants devoutly worship under the appellation of "Our Lady of Puy." **Ajaccio**, the capital of Corsica, and the birthplace of Napoleon I. in 1769, carries on a trade in wine, oil, and coral.

Capes and Islands.—The following are the principal capes:—Gris-Nez (*Grénay*), in Pas-de-Calais, the nearest point to England; Barfleur and La Hague, in the N. of Manche; Point St Matthieu and Raz Point in the W. of Finistère; Couquet, the extremity of the peninsula of Quiberon; Sicie, near Toulon. *Islands.*—Ushant and Belle Isle, S. of Morbihan; Noirmoutier and Ile Dieu, W. of Vendée; Ré and Oleron, W. of Charente Inférieure; Hières, S. of Var; Lerins, S.E. of Var; Corsica, a large island, between France and Italy, now forming one of the French departments.

Gulfs, Bays, and Straits.—Str. of Dover, 20 miles wide, bet. Picardy and Kent; Estuaries of the Somme and Seine; Bay of S. Malo, bet. Manche and Côtes-du-Nord; Estuary of the Loire, W. of Loire Inférieure; Estuary of the Gironde, bet. Charente Inférieure and Gironde; Bay of Biscay, bet. the W. of France and N.W. of Spain; G. of Lions, S.E. of France.

Surface and Mountains.—The face of the country is generally level, and its aspect monotonous and dreary. The want of ornamental plantations, and the almost total absence of hedges, give to the landscape an unusual degree of sameness. The principal mountain-ranges are situated on the S.W. and E. frontiers, and belong in part to the Hesperian, but chiefly to the Alpine system (see under "Europe," p. 69). They are all comprised in the following seven groups:—

The Pyrenees, between France and Spain, separating the basins of the Tet, Aude, Garonne, and Adour, from those of the Llobregat and Ebro—the loftiest summits (Maladetta, &c.) being within the Spanish frontier; Mont Perdu in Hautes Pyrenées, 10,994 feet; Mont Midi, in Basses Pyrenées, 9438 feet.

The Alps, between France and Italy, and between the basins of the Rhone and Po. The highest summits belonging to France are, Mont Blanc, in Haute Savoie, 15,781 feet, the culminating-point of Europe (unless we should except Mont Elburz, in the Caucasus, which is 18,571 feet); Mont Pelvoux, between Hautes Alpes and Isère, 13,440

feet; Mont Genèvre, 11,782 feet, and Mont Viso, 12,586 feet, both in Hautes Alpes.

Jura Mountains, between France and Switzerland, separating the basins of the Doubs and Aar; Mont Molleson, in Ain, 6588 feet; Reculet, 5632 feet.

Vosges Mountains, between Lorraine and Alsace, separating the Rhine from its affluent the Moselle; Ballon de Guebwiller, in Haut Rhin, 4694 feet; Ballon d'Alsace, 4123 feet.

Côte d'Or Mountains, in department of same name, separating the basins of the Seine and Loire from that of the Saône; Le Tasselot, 1968 feet.

Cevennes Mountains, in Languedoc, separating the basins of the Rhone and Saône from those of the Loire and Garonne; Mont Mezene, in Ardèche, 5820 feet; Mont Lozère, in Lozère, 4887 feet.

Auvergne Mountains, separating the basin of the Loire from that of the Dordogne and Garonne; Puy de Sancy, in Puy-de-Dôme, 6187 feet; Puy-de-Dôme, 4815 feet.

River-Basins.—Of the numerous river-basins of France, only 12 are of considerable magnitude—viz., the Loire, Seine, Rhone, Gironde, Somme, Vilaine, Charente, Adour, Tet, Rhine, Meuse, and Scheldt. The best authorities are greatly at variance in estimating the areas; and in some cases we can only make an approximation. It appears that these 12 basins comprise ⅓ths of the whole area of France, and 74 out of the 85 capitals, being ⅞ths of the entire number. Omitting the 5 basins which contain 1 capital each, the remaining 7 contain 67 capitals, or about ¾ths of the whole number, and their combined area (144,000 square miles) the same proportion of the entire area of France. The basin of the Loire alone contains 48,000 sq. m., and that of the Seine 26,000.

Table of Rivers and Towns.—The following table embraces all the rivers and towns of France enumerated under the "Political Divisions," the capitals of departments being distinguished by SMALL CAPITAL letters; towns above 10,000 inhabitants, by Roman letters, and smaller towns by *Italics*. The Rhine, Meuse, and Scheldt, being shown in their full development under Germany and the Netherlands, only the portions of them belonging to France are noticed here.

Basins inclined to the English Channel.

Rivers.	*Towns.*
Str. of Dover,	Dunkerque, Calais.
Colme,	*Bergues.*
Aa,	*Gravelines*, St Omer.
Lianne,	Boulogne.
Somme,	Abbeville, AMIENS, *Peronne*, St Quentin.
Maye,	*Cressy.*
Arques,	Dieppe.
Durdan,	*Yvetot.*
Co. Seine Inférieure,	Fecamp.
Seine,	Le Havre, *Honfleur*, ROUEN, Elbeuf, *Andely*, *Vernon*, St Germain-en-Laye, St Denis, VERSAILLES, n., PARIS, Boulogne, Vincennes, *Gentilly*, *Sèvres*, *Corbeil*, MELUN, Fontainebleau, *Montereau*, TROYES.
Bolbec,	Bolbec.
Rille, *l.*	*Pont-Audemer*, *L'Aigle.*
Charente, *l*	*Bernay.*
Aubette,	*Darnetal.*
Eure, *l.*	Louviers, CHARTRES.
Iton, *l.*	EVREUX.
Blaise,	*Dreux.*
Epte,	*Vernon.*

Basins inclined to the English Channel (continued).

Rivers.	*Towns.*
Oise,	*Pontoise*, Compiègne, *Noyon*, *Chauny*.
Nonette, *l*	*Senlis*.
Terrein,	Beauvais.
Bresches,	*Clermont*.
Aisne, *l*	Soissons, *Rethel*.
Vèle, *l*	*Reims*.
Delette,	Laon.
l	
Marne,	Paris, *Vincennes*, n., *Meaux*, *Chateau Thierry*, Epernay, Chalons-sur-Marne, *Vitry*, *St Dizier*, Chaumont, Langres.
Ornain,	Bar-le-Duc.
Essonne, *l*	*Corbeil*.
Juine, *l*	*Etampes*.
Loing, *l*	*Montargis*.
Yonne, *l*	*Montereau*, Sens, *Villeneuve*, Joigny, Auxerre, *Clamecy*.
Voisin,	*Avallon*.
Vouzie,	*Provins*.
Touques,	*Lisieux*.
Divea,	*Falaise*, n.
Ante, *l*	*Falaise*.
Orne,	Caen, *Argentan*, Seez.
Vere, *l*	Flers.
Drôme,	*Bayeux*, n
Vire,	St Lo, *Vire*.
Douve,	*Valogne*, n. (l. t.)
Divette,	Cherbourg.
Sienne,	*Coutances*, n. (r. t.)
Bosq,	Granville.
Seez,	*Avranches*.
Couesnon,	*Fougeres*.
Co. Ille-et-Vilaine,	*Cancalle*.
Rance,	*St Malo*, St Servan, *Dinan*.
Gouet,	St Brieuc.
Co. Côtes-du-Nord,	*Plouha*.
Trieux,	*Guingamp*.
Guer,	*Lannion*, *Plouaret*.
Relec,	Morlaix.

Basins inclined to the Atlantic.

Elorn,	Brest, *Plougastel*, *Lambezellac*, *Landerneau*.
Odet,	Quimper.
Quimperlé,	*Quimperlé*.
Blavet,	L'Orient, *Pontivy*.
Evel, *l*	*Baud*.
Co. Morbihan,	Vannes, Sarzeau.
Vilaine,	*Redon*, Rennes, *Vitre*.
Isaac, *l*	*Blain*.
Oust,	*Redon*.
Duc, *l*	*Ploermel*.
Cher, *l*	*Fougeray*.
Ille,	*Combourg*.
Loire,	St Nazaire, *Montoir*, Nantes, *Chalonne*, Angers, n., Saumur, Tours, *Amboise*, Blois, *Beaugency*, Orleans, *Gien*, *Cosne*, *La Charité*, Nevers, Roanne, Montbrison, St Etienne, n., Le Puy.
Sèvre Nantaise, *l*	Nantes, *Verton*.
Moine,	Chollet.
Divale, *l*	*Vallet*.
Layon, *l*	Chalonne.
Mayenne,	Angers, *Chateau-Gontier*, Laval, Mayenne, *La-Ferté Macé*.
Ernée,	*Ernée*.
Sarthe,	Angers, *Sable*, Le Mans, Alençon.
Loir,	*La Flèche*, *Vendôme*, Chateaudun.
L'Huine,	*Nogent-le-Rotrou*.
Dive, *l*	*Mamers*.
Thouet, *l*	*Parthenay*.
Argentan, *Argentan*.	
Vienne, *l*	*Chinon*, Chatellerault, *St Junien*, Limoges, *St Leonard*.
Creuse,	*Le Blanc*, Guéret, *Aubusson*.
Gartempe, *l*	*Montmorillon*.
Clain, *l*	Poitiers.
Indre, *l*	*Buzançais*, Chateauroux, *La Chatre*.
Cher, *l*	Tours, *Selles*, *Vierzon*, *St Amand*, *Montluçon*.
Saudre,	*Romorantin*.
Aron, *l*	Issoudun, n.
Auron,	Bourges.
Allier, *l*	Moulins, Clermont-Ferrand, *Issoire*.
Sioule, *l*	*St Pourçain*.
Andelot, *l*	*Gannat*.
Sichon,	*Cusset*.
Dore,	Thiers, *Ambert*.
Ambene, *l*	Riom.
Arroux,	Le Creuzot, n., Autun.
Furens,	St Etienne.
Lignon,	*Yssingeaux*, *Tence*.
Co. Vendée,	*Sable-d'Olonne*.
Lay,	*Luçon*, n.
Yon,	Napoleon-Vendée.
Sèvre Niortaise,	Niort.
Vendée,	*Fontenay*.
Co. Charente Inférieure,	La Rochelle.

Basins inclined to the Atlantic (continued).

Rivers	*Towns*
Charente,	Rochfort, Saintes, *Cognac*, ANGOULEME.
Boutonne,	*St Jean d'Angely*.
Dordogne,	Libourne, Bergerac.
Isle,	PERIGUEUX.
Loue, *l*	*St Frieix*.
Vezère,	*Montignac*.
Corrèze, *l*	*Brives*, TULLE.
Ceon, *l*	*Gourdon*.
Sarlat,	Sarlat.
Cere, *l*	AURILLAC.
Diege,	Ussel.
Garonne,	BORDEAUX, *Marmande*, *Tonniens*, AGEN, *Castel-Sarrasin*, TOULOUSE, *St Gaudens*.
Avance, *l*	*Marmande*.
Lot,	Villeneuve d'Agen, CAHORS, MENDE.
Celle,	*Figeac*.
Truseyn, *l*	*St Flour*, n.
Bayse, *l*	*Merac*, *Condom*.
Gers, *l*	*Lectoure*, AUCH.
Tarn,	Moissac, MONTAUBAN, *Villemur*, *Rabastens*, *Gaillac*, ALBI, Millhau.
Aveyron,	Villefranche, RHODEZ.
Agout, *l*	*Lavaur*, Castres.
Adou,	*Graulhet*.
Sor, *l*	*Revel*.
Larn, *l*	*Mazamet*, n.
Sorgues, *l*	*St Afrique*.
Lers,	*Grenade*.
Giron,	*Puylaurens*.
Arriège,	*Pamiers*, FOIX.
Adour,	Bayonne, DAX, TARBES, *Bagnères-en-Bigorre*.
Gave-de-Pau, *l**	*Orthez*, PAU, *Olorn*, n.
Midouze,	MONT-DE-MARSAN.
Lees, *l*	*Aire*.

Basins inclined to the Mediterranean.

Tet,	PERPIGNAN.
Aude,	Narbonne, CARCASSONNE, *Limoux*.
Fresquel,	*Castelnaudary*.
Orbe,	Béziers, Bedarieux.
Jean,	*St Pons*.
Herault,	*Agde*, *Pezenas*.
L'Ergue,	*Clermont-de-Lodève*, Lodève.
Arre,	*Le Vigan*.
Co. Hérault,	Cette, *Mèze*.
Lez,	MONTPELLIER.
Vidourle,	*Lunel-la-Ville*.
Vistre,	NIMES.
Rhone,	Arles, *St Gilles*, Tarascon, Beaucaire, AVIGNON, *Le Pont St Esprit*, Montelimar, VALENCE, *Tournon*, Vienne, GIVORS, LYON, GENEVA, LAUSANNE, Vevay, *Martigny*, SION or SITTEN, *Viep*, *Leuk*.
Gardon,	Beaucaire, Alais.
Seine, *l*	*Uzès*, n.
Anduze,	Anduze, St Jean-du-Gard.
Durance, *l*	AVIGNON, *Cavaillon*, *St Remy*, n., *Pertuis*, *Manosque*, *Sisteron*.
Calavon,	*Apt*.
Bleone, *l*	DIGNE.
Lure,	GAP.
Ouvèze, *l*	AVIGNON.
Auzon, *l*	Carpentras.
Sorgue,	*L'Isle*.
Aigues, *l*	Orange.
Ardèche,	*Aubenas*.
Ouvese,	PRIVAS.
Drôme, *l*	*Crest*.
Isère, *l*	Romans, GRENOBLE.
Morge,	Voiron.
Cance,	Annonay.
Gier,	Rive-de-Gier, St Chamond.
Saône,	LYON, Villefranche, MAÇON, *Tournus*, Chalons-sur-Saône, *Auxonne*, *Gray*.
Azergue,	Tarare, n.
Reys-souse, *l*	BOURG.
Seille, *l*	*Poligny*.
Vallière, *l*	LONS-LE-SAULNIER.
Doube, *l*	Dôle, BESANÇON, *Montbeliard*, *Pontarlier*.
Loue, *l*	*Arbois*, n., *Salins*, n.
Savouseuse,	*Belfort*.
Bouzoire,	Beaune.
Ouche,	DIJON.
Drejon, *l*	VESOUL.
Ain,	*St Claude*, n.

* The Gave-de-Pau issues from a lake fed by the glaciers of Mont Perdu, and then forms the Falls of Gavarnie or Marboré, the highest in Europe, descending with wild grandeur 1850 feet into the valley of Lux. Four other waterfalls, one of which is 600 feet high, leap over the rocks near the Marboré.

Basins inclined to the Mediterranean (continued).

Rivers.	*Towns.*
Savière, *l*...	Drains Lake Bourget.
Leisse,....	CHAMBERY.
Fieran, *l*	ANNECY.
Arve, *l*	GENEVA.
Etang-de-Berre,	*Les Martigues.*
Touloubre,..	*Salon.*
Arc, ...	Aix.
Verne, ...	MARSEILLE, *Aubagne*, *Auriol.*
S.E. Coast,....	*La Ciotat*, Toulon, La Seyne, *Antibes.*
Gapeau,.....	Hières.
Argense, ...	*Lorgues.*
Artuby, *l*...	DRAGUIGNAN.
Calami,.....	*Brignoles.*
Siagne, ...	*Cannes.*
Esteron, *l* ..	Grasse.
Paglione,.....	NICE.
Co. of Nice,...	*Monaco*, *Mentone*, *Ventimiglia.*

Basins inclined to the North Sea.

Rhine,*.....	STRASBOURG, Guebwiller, n.
Moselle, *l* ..	*Thionville*, METZ, *Pont-à-Mousson*, NANCY, *Toul*, EPINAL, *Remiremont.*
Sarr,.....	Saarbrück, *Sarreguemines.*
Meurthe,	NANCY, Lunéville, St Diey.
Madon, *l*	*Mirecourt.*
Moder, *l*....	Haguenau, *Bischwiller.*
Zorn,	*Saverne.*
Ill, *l*.....	STRASBOURG, Schelestadt, COLMAR, Mulhausen.
Bruche, *l*	*Oberheim.*
Liepvrette, *l*	St Marie-aux-Mines.
Thaur, *l* ..	Mulhausen, *Thann.*
Meuse,.....	*Givet*, Charleville, MEZIÈRES, Sedan, Verdun, *St Mihiel.*
Sambre, *l*...	Maubeuge.
Scheldt,.....	*Condé*, *Anzin*, Valenciennes, Cambrai.
Lys, *l*.....	Tourcoing, n., *Comines*, Armentières, Halluin, Bailleul, n., *Merville*, *Aire.*
Deule,....	Waltrelos, Roubaix, n., LILLE, *Carvin-Epinoy*, *Lens.*
Beurre, *l*	*Hazebrouck.*
Lawe,....	Bethune.
Scarpe, *l*...	St Amand-les-eaux Douay, ARRAS.
Selle,	*Solesmes*, *Le Cateau.*

Lakes.—France is singularly devoid of lakes, and the few that exist are of very small dimensions. Grand Lieu, the largest of them, in the department Loire Inférieure, occupies only 20 sq. miles, and St Point, in department Jura, 3 sq. miles. But there are numerous lagoons, or salt marshes, called *Étangs*, in the S.W. and S.E. departments, from which large quantities of salt are annually produced. The principal are Carcans and Certes, in Gironde; Sanguinet and Biscarosse, in Landes; Leucat and Sigeau, in Aude; Thou, in Herault; and Etang de Berre, in Bouches-du-Rhone.

Climate.—France lies between the isotherms of 50° and 60°, hence the climate is scarcely surpassed by that of any country in Europe, though, owing to the great extent of its surface, there are great diversities. Thus, in the N.W. departments, it greatly resembles the S. of England; in the N.E. the winters are long and often severe; in the S.E. the sky is almost always serene, and the winters of short duration. The mean annual temperature in the N. is 50°, and in the S. 60° Fahr., the mean temperature of the capital is slightly greater than that of London, but is 2° higher in summer, and as many lower in winter. Mean annual rain on the W. coast, 24 inches, S. 23, N. 22 inches; rainy days at Paris, 105; on W. coast, 152; in the interior, 147; but on the coast of the Mediterranean, only 66. The hot

* The Rhine no longer forms part of the boundary of France

winds of Africa frequently spread desolation in the S.E. departments, while the S.W. are exposed to piercing winds and tempests from the Pyrenees and Bay of Biscay. The olive is successfully cultivated in the S.E.; the general cultivation of maize extends northward to a line drawn from Bordeaux to Strasbourg; the vine is profitably cultivated as far north as a line connecting the mouth of the Loire with Mezières on the Meuse, while N. of this line is the region of wheat, flax, and beetroot.

Geology and Minerals.—The geology of France is as varied as that of England, comprehending all the formations of the geological scale. The secondary strata, however, are the most highly developed, and cover the largest portion of the surface. They prevail chiefly in the E. and N.E. departments, from the Mediterranean to Metz on the Moselle. They also cover a large part of the W. of France, extending from the Garonne to the mouth of the Seine, but not including Brittany, which is nearly all Silurian. The next in importance is the tertiary series, which occupies the region between the Pyrenees and Garonne; an extensive tract along the E. side of the Rhone and Saône; and a still more extensive area around the capital, known as the *Paris basin*, and celebrated as the field in which the great Cuvier made his remarkable palæontological discoveries. Granitic rocks occur in many places, but prevail especially in Brittany, and along the great water-parting separating the basins of the Loire and Garonne; and, lastly, volcanic rocks are numerous in Cantal and Puy-de-Dôme, where they form an irregular ridge of mountains, consisting chiefly of extinct volcanoes. The most abundant coal-deposits are found in the central departments, especially in the basins of the Loire, Creuse, Dordogne, Aveyron, Ardèche, and Rhone, and in the mountains of Cevennes. An extensive coal-field extends from Boulogne in an easterly direction to Belgium, and forms a source of great wealth to the flourishing cities of the N. coast of France; but it is a curious fact that coal in France is unaccompanied by ironstone, a mineral which so greatly enhances its value in England and Scotland. The next most important mineral is iron, found in all parts of the kingdom, and worked to the extent of half a million of tons annually; coal, as already described, wrought in 400 coal-mines, and yielding upwards of 11,000,000 tons annually; salt-mines of great value; copper, lead, silver, antimony, and small quantities of gold, sulphur, and sulphate of iron; marble, gypsum, alabaster, building-stone, and slate, in many localities.

Botany.—France surpasses all other European countries in the number and variety of its indigenous plants. Thus, while the indigenous plants of the British Isles amount only to 4400 species, of which 1600 are flowering, France contains 7000 species, of which 3540 are flowering, or, according to Martins, 3660, of which 713 are monocotyledons and 2950 dicotyledons. The principal *forest-trees* are the different varieties of the pine tribe, as common fir in Vosges and Jura, and the larch in the loftier Alps; the oak, beech, elm, ash, birch, and cork-tree. Forests occupy about 17,000,000 acres, being

nearly an eighth of the entire surface, and are the more valuable in that they thrive in soils which could not otherwise be turned to good account. The principal *fruit-trees* are the vine, olive, chestnut, walnut, almond, apple, pear, cherry, orange, citron, fig, pomegranate, pistachio, lemon, and plum.

Agriculture.—Except on the borders of Belgium, agriculture is in a backward state, though the recent improvements have been extensive, and the implements used in husbandry are of an inferior description. The British system of rotation of crops is unpractised, and large farms are unknown. This is mainly owing to the extreme subdivision of property. When a landed proprietor dies, the land is equally divided among all his children. The result is that there are now in France about 8,000,000 landed proprietors, of whom 50,000 possess on an average 600 acres each; 2,500,0000 have 60 acres each, while 5,000,000 have only 6 acres each. The soil is in general of moderate fertility, but in many places very rich: ½ is under cultivation, ⅛th occupied with forests and fruit-trees, $\frac{1}{12}$th in permanent meadows, and ⅛th in unreclaimed waste land. Vineyards now occupy about a twentieth part of the entire area, and the French are allowed to be the best winemakers in the world. The most celebrated wines are those of Champagne, Burgundy, and Bordeaux. Wheat and the vine form the principal objects of culture, and next to them barley, oats, rye, buckwheat, Indian-corn, peas, beans, potatoes, and flax. Wheat is grown chiefly in the north, where the vine cannot be cultivated successfully; maize in the south; and rye throughout the whole country. The quantity of corn raised is usually sufficient for the wants of the population, and considerable quantities are often exported. Mulberry-trees form an important article of culture, especially around Lyon; beet-root, from which sugar is largely manufactured; tobacco and madder are also cultivated in several departments, but the olive almost exclusively on the coast of the Mediterranean. In the rearing of cattle and sheep France is far behind Great Britain, but poultry are very extensively reared.

Zoology.—Among the wild *Mammalia* may be reckoned the black and brown bear in the Pyrenees; the lynx in the higher Alps; the wolf and wild boar in the forests; the chamois and wild goat in the Alps and Pyrenees; the stag, roebuck, hare, rabbit, and fox, are common; the marmot, ermine, hamster, the red, alpine, and flying squirrel in the Vosges; the badger, hedgehog, polecat, weasel, rat, mouse, and mole, everywhere; the beaver is found on the banks of the Rhone; the otter and water-rat in most of the other rivers. *Birds.*—The songsters and the birds of passage are much the same as in England; the flamingo is found on the shores of the Mediterranean; the red and grey partridge, quail, pheasant, woodcock, plover, lapwing, wild-duck, and snipe are common; the eagle, falcon, and buzzard in the mountains. *Reptiles* are represented by numerous species of frogs, including the salamander, by a few tortoises, and by several species of vipers and of harmless snakes. *Fishes.*—The herring, mackerel, sardine, pilchard, turbot, sole, whiting, on the west coast; the tunny and anchovy in the Mediterranean; and the salmon in the river-estuaries. The *Articulata* include the crab, lobster, crayfish, and numerous insects, among which may be mentioned bees, which are extensively reared; and the silkworm, which

forms a highly important source of wealth. Of *Mollusca*, the oyster and mussel form important articles of food.

Ethnography.—In ancient times France (formerly Gallia, or Gaul) was inhabited by three different races—viz., the Aquitani in the S., an Iberian race; the Celts in the centre, a Gallic race; and the Belgæ in the N., a Gothic race. The French people are therefore of a mixed race, partly Teutonic, but chiefly Roman and Celtic. The Gauls, or Celts, were the original inhabitants, but were invaded early in the fifth century by the Franks, Burgundians, and Visigoths, a confederacy of German tribes who had previously occupied the right bank of the Rhine. In Brittany the Celtic element remains almost pure, and the Basque in Bèarn; while Flemish is spoken in French Flanders, and Italian in the S.E.

The French *Language* is an important member of the Greco-Latin family. The country having been long subject to the Romans, the original language of the inhabitants was displaced by the Latin, which was in turn greatly corrupted by the Franks. The Armoric, however, a purely Celtic dialect, continues to be spoken in Brittany; and the Basque, which cannot be classed under any known family, is spoken in the extreme S.W.

Religion.—The great bulk of the population are nominal adherents of the Church of Rome. In 1872 upwards of 35,000,000 belonged to that faith, while only 580,000 were Protestants, and 49,000 Jews. The majority of the Protestants are Calvinists, but Lutherans are numerous in Alsace. Protestants, and even Jews, are endowed by the State, as well as the dominant religion; but the amount of toleration shown to those denominations who will not submit to State control is very limited.*

Education.—From its lowest to its highest stage, education in France is regulated by the Government. Primary instruction is defective and very irregularly distributed, but flourishes most in the eastern and northern departments. In 1833 a system of national education was established, and every commune required to maintain at least one elementary school; yet in 1872, one-third of the adult population could neither read nor write. Advanced education is conducted by an organisation known as the "University of France," which embraces five faculties—viz., those of Science, Letters, Law, Medicine, and Theology, and which has branches in Paris, Caen, Toulouse, Dijon, Poictiers, and Rennes. The Roman Catholic Church, however, educates its clergy in its own ecclesiastical seminaries, in which the curriculum is very limited. The duration of school-life is regulated by the religion of the scholar. Roman Catholics rarely attend school after eleven or twelve, when they receive their first communion, but Protestants commonly remain till about sixteen. In intellectual character the French people occupy a foremost place; while for exquisite taste, politeness, and courtesy of manners, they are unrivalled among the nations. In moral qualities, however, they are

* In January 1868 a decree was issued intimating that the Protestants now in the country must be contented with being tolerated exactly in their present condition. No attempts at proselytism will be allowed; no new churches or new schools will be tolerated; and, as a climax to this piece of religious oppression, it is further intimated that all attempts to discuss religious questions will be treated as sedition, and suppressed accordingly. On the whole, Protestantism has hardly been in a worse condition in France since the reign of Louis XIV.

less favourably distinguished; they are deficient in solidity of character and strength of principle; incapable alike of bearing prosperity or adversity. Fickleness of disposition and a passion for military glory are prominent features of their character. Licentiousness of manners is another distinguishing trait, especially in large cities: in the capital, for instance, every third mother is unmarried, and every third child has a stain on his birth; but over the whole country the proportion is only one to fourteen.

Literature.—Though France cannot boast of many geniuses of the first order, a great number of brilliant names adorn her literature. The following are amongst the most distinguished of her many gifted sons:—

POETRY: Molière, Racine, Corneille, La Fontaine, Boileau, Crebillon, Voltaire, Beranger, J. B. Rousseau, Hugo, Dumas, Musset. HISTORY: Froissart, Rapin, Voltaire, Rollin, Comines, De Thou, Sully, Barante, Thierry, Thiers, Mignet, Guizot. FINE ARTS: Poussin, Vouet, Claude Lorrain, Vanloo, Le Sueur, P. Mignard, Charles le Brun, Watteau, Vernet, Greuze, David. PHYSICAL SCIENCE: La Place, Lavoisier, Lagrange, Lalande, D'Alembert, Buffon, Réaumur, Jussieu, Cuvier, Arago, Balbi. MENTAL SCIENCE: Descartes, Malebranche, Gassendi, Bayle, Condillac, Montesquieu, Cousin. PULPIT ELOQUENCE: Bourdaloue, Bossuet, Fénélon, Massillon. SACRED LITERATURE: Calvin, Beza, Pascal, Bochart, Daille, Tillemont, Le Long, Dupin, Fleury, Basnage, Saurin, Le Clerc, Calmet, Houbigant. MISCELLANEOUS: Rabelais, Montaigne, H. and R. Stephens, Casaubon, Salmasius, Herbelot, Sévigné, Du Cange, Montfaucon, Le Sage, Fontenelle, Marmontel, Diderot, St Pierre, Volney, De Sacy, Champollion, Chateaubriand, La Bruyère, La Rochefoucauld, Talleyrand, Hugo, Dumas, Musset, Balzac, De Kock, Eugene Sue, Lamartine.

Form of Government, Army and Navy, Public Debt, Revenue and Expenditure.—The French Revolution, overthrowing the Monarchy, commenced in 1789. Napoleon Buonaparte was proclaimed Emperor in 1804, and finally abdicated in 1815. Louis Philippe became King of the French in 1830, but abdicated in 1848, when France became a Republic with Louis Napoleon, nephew of Napoleon the Great, as its President. In 1852 he was declared Emperor, but his reign came to an ignominious termination by the terrible defeat at Sedan (September 2, 1870), and France is now once more a Republic. The Franco-German war cost this unhappy country about £560,000,000, including a war indemnity to Germany of £200,000,000. Previous to the Great Revolution the total public expenditure of France did not exceed £40,000,000 a-year, a sum which now barely covers the interest on the National Debt. In 1873 the army amounted to 454,000 men, including 280,000 infantry, 60,000 cavalry, and 51,000 artillery. The navy is very formidable, but is at present in a state of transition. It was of no use to France in her hour of peril. The revenue and expenditure in 1875 amounted to upwards of £100,000,000 each.

Commerce, Manufactures, Exports and Imports.—France ranks next to Britain, in regard to the extent and value of her commerce and manufactures. In 1873, the commercial marine comprised 14,637 vessels, carrying 1,042,000 tons, or about a fifth part of the tonnage of Great Britain; the total exports amounted to £140,000,000, and the imports to £132,000,000. Her chief customer is England, her trade

with that country having increased more than 150 per cent since the treaty of commerce of 1860. The other principal countries are Belgium, Italy, Netherlands, and Spain. In 1873, France exported to our country goods to the value of £43,740,000, the chief items of which were silk and silk goods (£10,000,000), wines and brandy (£3,000,000); gloves, butter, and eggs (£4,000,000). In the same year France received from us to the value of £17,031,000, consisting mainly of woollen, cotton, and linen goods, coal, and iron. Her principal imports from other countries are raw silks, wool, sugar, cotton, wood, and coal. With respect to manufacturing industry, France is divisible into three regions, which, in the order of their importance, are the northern, southern, and central. The northern towns (especially Rouen) are the chief seats of the cotton and woollen manufacture; while the linen manufacture is chiefly confined to Lille, Cambray, and the other towns bordering on Belgium; silk-weaving is chiefly prosecuted at Lyon, and other cities in the valley of the Rhone. St Etienne is the chief seat of the manufacture of firearms and hardware. Paris is remarkable for the great variety of its manufactures, especially articles of taste, luxury, and fashion—as jewellery, bijouterie, porcelain, mirrors, clocks, watches, perfumery, bonnets, gloves, carriages, and "Articles de Paris." The glove manufacture is one of the most important branches of industry in the country, Paris being its chief seat. Caen and Valenciennes are famous for their lace, Cambray for muslin, Reims for merinoes; while the manufactures of beet-root-sugar, wine, and brandy, are of the highest importance.

Inland Communication.—As compared with England and Belgium, RAILWAY communication is still in a backward state. Previous to 1840, there were but few lines in the kingdom. In 1854, the number of miles open for traffic was 2526, while at the close of 1874 there were 12,420 miles in operation. Nearly all the lines are at present in the hands of six great companies, and all the grand systems radiate from Paris, as a centre, to the extremities of the kingdom. Commencing at the capital, 1st, the NORTHERN, proceeds to Amiens, and then branches to Brussels and Boulogne; 2d, the WESTERN runs to Rouen, where it forks to Dieppe, Havre, and Cherbourg; 3d, the ORLEANS line proceeds S.W. to Tours, where it branches off to Nantes and Bordeaux; 4th, the LYON and MEDITERRANEAN, to Lyon and Marseille; 5th, the SOUTHERN, from Bordeaux to Montpellier; 6th, the EASTERN, from Paris to Nancy. There are now 29,000 m. of telegraphic wires. There are eighty-six canals, whose united length is 2350 miles, and which connect all the principal rivers of France. The most important are the following: *Canal du Midi*, from Toulouse, on the Garonne, to the lagoon of Thou, connects the Atlantic and Mediterranean. *Canal du Centre*, from Chalons-sur-Saône to Digoin in Saône-et-Loire, unites the Loire with the Rhone. *Rhine and Rhone Canal*, partly in the line of the Doubs, unites the Rhine and Rhone. *Canal de Burgogne*, from the Saône to the Yonne, connects the Rhone with the Seine. *Canal du Braire*, connecting the Seine with the Loire. The ROADS are divided into two classes—viz., Royal and Departmental. Of the former there are twenty-six, whose united length is 24,900 miles; and of the latter, ninety-seven, with a united length of 22,500—making a total of 47,400 miles.

Foreign Possessions.—The foreign possessions of France have an

aggregate area one and a half times greater than its home territory; but their population is not more than one-tenth that of the latter.

They consist principally of Algeria (Fr. *Algérie*), in Africa, and French Guiana, in South America, which are by far the most important; together with Senegal, Goree, &c., on the W. coast of Africa; the island of Reunion, in the Indian Ocean; Mahé, Karikal, Pondicherry, Yanaon, and Chandernagore, in Hindostan; St Pierre and Miquelon, in the Gulf of St Lawrence; Martinique, Guadeloupe, and a few other islands in the West Indies; New Caledonia, Loyalty Is., Tahiti, Marquesas, and the Gambier archipelago, in Oceania. France also lays claim to a large territory in the S. of Cochin China, with a population of 1,200,000. Total area of the colonies, including Algeria and Cochin China, 288,951 square miles; population, 3,264,000.

BELGIUM.

Position and Boundaries.—N., the Netherlands; N.W., the North Sea; S.W. and S., France; E., Dutch Luxembourg, Rhenish Prussia, and Dutch Limbourg. Lat. 49° 30′—51° 30′ N.; lon. 2° 33′—6° 5′ E.

Brussels, the capital, situated nearly in the centre of the kingdom, is nearly on the same parallel with Cape Clear in Ireland, Dover in England, Dresden, Breslau, Lublin, Tchernigov, Uralsk, on the continent of Europe, and Irkutsk in Siberia; and nearly on the same meridian with the Hague, Lyon, and Minorca. The form approaches an isosceles triangle, with the base or longest side resting on France. Length along the base, 190 miles; and the greatest breadth from the apex of the triangle to the base, 115 miles. The coast-line is small, measuring only 40 miles; but the Maas and Scheldt, with their principal affluents, being navigable, and the country being intersected by railways and excellent canals in all directions, the commercial facilities are very great.

Surface.—The greater part is level, and but little elevated above high-water mark; but the southern provinces form a slightly inclined plane, sloping towards the north. Natural barriers, consisting of sandhills 50 or 60 feet high, protect the country from the inroads of the sea; while numerous artificial banks have been constructed along the rivers to save the country from inundation. Belgium is destitute of mountains, but the southern and eastern provinces are traversed by the heights of Ardennes, which enclose the valley of the Maas, and separate it from the basin of the Moselle; highest point, Stavelot, near Liège, 2000 feet.

Area and Population.—The area is 11,408 sq. miles, being nearly twice as large as Yorkshire, or 1¾ acre to each inhabitant. In 1872 the population was 5,113,000, being 440 persons to each sq. mile. Belgium is therefore the most densely peopled state in Europe. The northern provinces are the richest and most populous, East Flanders having 706 inhabitants to the sq. mile.

Political Divisions.—The kingdom is divided into nine provinces, each of which is subdivided into arrondissements, communes, and cantons. Commencing at the North Sea, and proceeding eastward and southward, the provinces and towns are enumerated in the following table :—

West Flanders.*—Bruges 50, Ostend 15 (Ostend Canal), Courtrai 20, Menin 10 (Lys), Thielt 10 n., Roulers 14 (Mandel), Ypres 16 (Yperlée), Poperinghe 11 (Vleterbeque).

Towns between 5000 and 10,000 inhabitants.—Werwick, Warneton, Meulebeke, Ingelmünster, Iseghem, Thourout.

East Flanders.—Ghent 121, St Nicholas 20, Zele 10 *n.*, Renaix 14 n. (Scheldt), Lokern 17 (Duvine), Alost 19 (Dender).

Themsche, Dendermonde, Wetteren, Oudenarde, Hamme, Eccloo.

Antwerp.—Antwerp 127 (Scheldt), Mechlin or Malines 36 (Dyle), Lierre 15 (Nethe), Turnhaut 14 n. (Little Nethe).

Boom, Gheel.

Limbourg.—Hasselt 10 (Demer), St Trond 11 (Geete), Tongres 6 (Jaar).

Liege.—Liege 106, Herstal 6, Huy 11 (Maas), Verviers 34 (Vesdre).

Belgian Luxembourg.—Arlon 6 (Semoy, *affl.* Maas).

Namur.—Namur 25, Andenne 6, Dinant 7 (Maas).

Hainault.—Mons 23 (Haine), Charleroi 13 (Sambre), Tournay 32 (Scheldt).

Binche, Peruwelz, Lessines, Ath, Leuze, Soignies, Braine-le-Comte, Paturages, Jumetz, Gilly, *Fleurus, Fontenoy.*

South Brabant.—Brussels, including the 8 adjacent communes, 308 (Senne), Louvain 33 (Dyle), Tirlemont 12 (Geete).

Assche, Vilvorde, Hal, *Waterloo*, Nivelles, Wavre, *Genappe*, Diest, *Ramillies, Quatre Bras, Ligny.*

Descriptive Notes.—There are in Belgium four towns of above 100,000 inhabitants (Brussels, Antwerp, Ghent, Liege) ; none between 100,000 and 50,000 ; nine between 50,000 and 20,000 (Bruges, Mechlin, Louvain, Verviers, Tournay, St Nicholas, Courtrai, Mons, Namur) ; and fifteen between 20,000 and 10,000.

Bruges (*Flem.* Brugge, "bridges") owes its name to the numerous bridges which cross the canals intersecting it, is a fortified city, capital of the province, and formerly one of the greatest marts of commerce in Europe ; began to decline in the fifteenth century, when the religious persecutions of Philip II. obliged many of the inhabitants to seek refuge in England ; still noted for its lace, damask, and linen manufactures : here oil-painting and decimal arithmetic had their origin. **Ostend**, the only maritime town of Belgium, and the principal port for the herring-fishery, is the packet-station for England, and is strongly fortified ; has shipbuilding docks, and is much resorted to for sea-bathing : here terminates the great system of canals which intersect the kingdom. **Courtrai**, a fortified town with important manufactures of damask. **Ghent** (*Fr.* Gand), at the confluence of the Scheldt and Lys, a walled and fortified town intersected by numerous canals, which are crossed by 300 bridges : from the great extent of its cotton manufactures, it has been called the Manchester of Belgium : it is the seat of one of the four universities, and the birthplace of

* The pronunciation of Belgian proper names does not in general differ essentially from that of the Dutch ; for which, see under "Netherlands."

Charles V. and John of Gaunt. **St Nicholas** and **Lokern** are also chief seats of the cotton manufacture. **Oudenarde**, celebrated for the victory gained by the Duke of Marlborough and Prince Eugene over the French, in 1708. **Antwerp** (*Fr.* Anvers), a large and very strongly fortified city on the Scheldt, and the chief emporium of Belgian commerce, contains a noble cathedral, many valuable works of art, and extensive manufactures, the chief of which are silk and cotton hosiery: in the 13th and 14th centuries it was the wealthiest and most commercial city in Europe. Here died the illustrious Rubens in 1640, and it is the birthplace of Jordaens, Vandyk, and Teniers. **Mechlin** (*Fr.* Malines), on the Dyle, and at the intersection of several railways, is a place of great trade, especially in flax, corn, and oil. **Liège** (*D.* Luyk, *G.* Lüttich), a fortified and populous city on the Maas, is called the Birmingham of Belgium, on account of its vast ironworks and extensive coal-mines; long celebrated for the manufacture of arms, which it largely exports to foreign governments. **Verviers**, noted for its woollen cloth, soap, and dye-works. **Huy** (We), a fortified town, with a college, ironworks, several factories, and an active trade in corn, is the burial-place of Peter the Hermit. **Namur**, a fortified city at the confluence of the Maas and Sambre, is celebrated for its cutlery: it has extensive manufactures of iron, steel, and bronze articles; its cathedral is one of the finest in Belgium: in the vicinity are rich mines of coal, iron, lead, and copper. **Mons**, a fortified city on the Haine, with numerous coal-mines in the vicinity. **Tournay**, a strongly fortified city on the Scheldt, has a royal factory for the manufacture of Brussels carpets. **Charleroi**, a celebrated fortress which has been taken by the French no less than six times, lies near the centre of an extensive and valuable coal-field; is well situated both for manufactures and trade. **Fleurus**: various sanguinary battles took place in its vicinity in 1622, 1690, 1794, and 1815. **Fontenoy**, a village five miles S.E. of Tournay, memorable as the place where, in 1745, the British were defeated by the French. **Brussels** (*Fr.* Bruxelles), capital of Belgium, is adorned with many fine buildings, fountains, and public walks of great beauty. It is the chief seat of public instruction, contains a university, and numerous other literary and scientific institutions, and is noted for book-printing, especially its cheap reprints of French works. Brussels was long celebrated for its carpets and lace, but the former branch of manufacture has now greatly declined. Brussels is an ancient city, having been founded probably in the seventh century: was the residence of the Dukes of Brabant, and afterwards of the Spanish and Austrian governors-general of the Netherlands. **Louvain**, once the seat of a famous university, now replaced by a Roman Catholic college. **Waterloo**, a village 9 miles S. of Brussels, famous for the great battle fought near it, June 18, 1815, between the French under Napoleon I., and the British under the Duke of Wellington, when Napoleon was utterly defeated. **Ramillies**: here the Duke of Marlborough defeated the French, 23d May 1706. **Quatre Bras**, a village 10 miles S. of Waterloo, and the scene of an indecisive action between the French and the British (with their allies), 16th June 1815, in which the Duke of Brunswick fell. **Ligny**, a village 14 miles W.N.W. of Namur, celebrated for a battle between the Prussians and French, 16th June 1815.

River-Basins. — The Maas (*Fr.* Meuse) and the Scheldt (*Fr.* Escaut) are the only rivers of Belgium that deserve attention. The former has a total length of 580 miles, and the latter of 211 miles; but only a part of their course belongs to this kingdom. Of the

nine capitals of provinces above enumerated, three belong to the Maas—viz., Liège, Namur, and Arlon; and five to the Scheldt—viz., Antwerp, Ghent, Brussels, Hasselt, and Mons. For the table of rivers and towns, see under "Netherlands," where the complete river-system of both countries will be found.

The Climate is in general temperate, mild, and agreeable, but humid in the N. and N.W. The mean temperature of the year at Brussels is 50°.4, winter 38°, summer 64° Fahr.; the range of temperature is very great—the extreme heat being 91°.6, and extreme cold 3° below zero. The prevailing winds are from the S.W., and the annual fall of rain is about 26 inches.

Geology and Minerals.—Tertiary formations cover the whole N.W. and centre; but in the E. and S. carboniferous and Devonian strata prevail, containing many extensive and valuable coal-fields, especially in the provinces of Hainault, Namur, and Liège. The minerals are numerous and highly important, embracing coal and iron, which are wrought most extensively around Mons, Liège, and Charleroi: 83 coal-beds are enumerated, which yield annually about 10,000,000 tons of coal, a third of which is exported to France, whose entire coal-fields are inferior to those of Namur alone. With the exception of England, Belgium is the best coal-producing country in Europe. Liège alone produces 200,000 tons of iron annually; and many other iron-mines are wrought between the Maas and the Sambre. Other minerals are, copper in Hainault and Liège; lead in Liège, Namur, and Luxembourg; calamine, or carbonate of zinc, in Namur, Liège, and Hainault; also manganese, sulphur, alum, slate, and building-stone, and several other useful minerals.

Botany, Agriculture, and Zoology.—The indigenous vegetation of Belgium differs so little from that of the north of France and the south of England, that it is unnecessary to describe it. Among the forest-trees are the oak, chestnut, beech, elm, ash, walnut, fir, and poplar. Agriculture is in a highly flourishing state, and has long served as a model to neighbouring countries. The soil is not naturally fertile, as it generally consists of either sand or clay, but the skill and industry of the husbandman have so judiciously mixed these ingredients that Belgium may now be regarded as the richest and most productive country in Europe. The rotation of crops is carefully attended to; artificial manures are largely employed; and the result is, that though the country is so densely peopled, the quantity of corn raised is double that required for home consumption. Seven-eighths of the entire surface are under cultivation, and the remainder yields excellent timber for bark and building purposes. Clover forms an extensive article of farming and the chief food of the cattle, which are usually stall-fed, the seed being exported to England. The flax is of an excellent quality, and is also largely exported. The vine is cultivated on the banks of the Maas, but the wine is of an inferior quality. Hops, beetroot (for sugar), chicory, and tobacco, are grown in the central provinces; potatoes, flax, oil-seed, and madder, in Flanders; and wheat, rye, barley, oats, and

buckwheat, everywhere. The principal wild animals are the roe buck, wolf, bear, and wild boar. The moors around Verviers are said to be the only asylum in Continental Europe for the heath-cock. Among domestic animals may be reckoned horses, horned cattle, sheep, and pigs, all of which are reared in great perfection. Flanders is specially noted for its breed of horses. The culture of bees and of the silkworm is also pursued to great advantage.

Ethnography.—Two races of people are found in Belgium—a Teutonic and a Greco-Latin—the Flemings proper being of German, and the Walloons of French extraction. The *Belgæ* formed one of the three great nations into which Cæsar found the population of Gaul divided, when their territory extended from the Rhine on the N. to the Seine and Marne on the S. They had, in Cæsar's time, driven out, or reduced to subjection, the former inhabitants, who appear to have been Celts; but the Belgæ themselves had crossed the Rhine from Germany. The *Walloons* in the S.E. are mixed Celts, and the name bears an affinity to the terms *Wales* and *Welsh* of our country.

The *Languages* are three in number—French, Walloon, and Flemish. Modern *French* is the language of the court, of the legislature, of society, and of literature. The *Walloon* is a dialect of the French, or rather it is the same as the French of the thirteenth century, and is spoken by 1,800,000 in Hainault, Namur, Liège, and Luxembourg. The *Flemish* is spoken by about 2,400,000, chiefly in Flanders, Antwerp, S. Brabant, and Limbourg: it is closely allied to Dutch, and is, in fact, merely the Dutch of the preceding century. It differs from modern Dutch chiefly in orthography and pronunciation; is less guttural, and has adopted many French words. German is spoken in a part of Luxembourg. *Religion.*—The population of Belgium belong almost exclusively to the Roman Catholic Church, there being but 13,000 Protestants and 2000 Jews; but other denominations are not only tolerated, but their churches are supported by the State, and Protestantism is on the increase. *Education* is moderately attended to, Belgium being a better educated country than either France or Austria. By the last census it appears that nearly half a million children were attending school, or a ninth part of the whole population. Since Belgium was separated from the Netherlands (1830), attendance at school is no longer compulsory; and public instruction is chiefly under the control of the priests. There are now only three universities (Ghent, Liège, and Brussels), fourteen public libraries, containing 500,000 volumes, numerous gymnasia on the German model, and diocesan seminaries in nearly all the large towns. The *National Character* is not homogeneous, owing to the existence of two distinct races, each of which has preserved its own customs, language, and manners from early times. The Flemings, however, greatly resemble the Dutch in cleanliness, perseverance, and laborious industry. The Walloons resemble the French in dress, manners, and vivacity of disposition. Both races are excessively attached to religious shows and ceremonies, which excite surprise by their extreme puerility, and aggravate the pauperism of the country—embracing nearly one-fourth of the entire population.

Literature.—The literature of Belgium is inseparable from that of the Netherlands, the Flemish language and the Dutch having

been till recently the same. The principal authors belonging to the kingdom have written either in Latin or in French, while their native tongues have remained uncultivated, exhibiting only such works as spelling-books, devotional manuals, and the lives of saints. Belgium, indeed, has always been more celebrated for the fine arts than for literature, in which it stands greatly lower than the Netherlands. The Flemish school of painting, founded by Hubert and John Van Eyck, excels in colouring and in the faithful imitation of nature, but does not always exhibit sufficient nobleness of design. It has produced eminent artists in every style; but Rubens, Vandyk, Jordaens, and Teniers are its principal ornaments. The academy at Antwerp, the cradle of this school, was founded in 1510, but there was a society of painters at Antwerp from the year 1442. Other distinguished names belonging to Belgium are Jacob Van Maerland, "father of the poets of the Netherlands;" Philip de Comines, Schott, and Strada, in the department of history; Lipsius, Drusius, and Oudenarde, in philology and criticism; Vesalius and Van Helmont in anatomy and medicine; and Simon Stevin in mathematics, the reputed inventor of decimals. Music is greatly cultivated among all classes of the people, and architecture has been carried to a high degree of perfection, more especially in the Gothic style.

Government and Finance.—The Government is a limited constitutional monarchy, the legislative power being invested in the King, a Senate, and House of Representatives, the last two of which are elected by the people. Liberty of the person and of conscience, freedom of speech and of the press, and trial by jury, are guaranteed by the laws. The origin of the kingdom as a separate State dates only from 1830, previous to which it was united to Holland, and Belgium is consequently the most recently formed independent State in Europe. It successively formed part of the dominions of Austria and Spain from the fifteenth century until 1795, when it was conquered by the French: it was annexed to Holland in 1813, but successfully asserted its independence in 1830. In 1868 the infantry numbered 74,000, the cavalry 7900, artillery 14,513; making a total force of 98,770. The *Navy* is insignificant, but increasing; and recently several powerful steamers have been constructed, which are fitted alike for mercantile and warlike purposes. The *Public Debt*, in 1874, amounted to £37,000,000, being £6 per head; the *Revenue* in the same year amounted to £9,000,000; and the *Expenditure* to £9,500,000.

Commerce.—The *Exports* in 1872 amounted to £42,017,000, and the *Imports* to £51,117,000. The imports comprise various tropical products, as tea, coffee, raw sugar, cotton; tobacco from the United States; wines and fruits from the south of Europe; cotton yarn, cotton cloths, hardware, earthenware, and various manufactured articles from England; and wool from Germany. The principal exports are coal, corn, cattle, woollen fabrics, hempen and linen cloths, flax, hemp, clover-seed, oak-bark, lace, lawn, cambric, car-

pets, cutlery, nails, and refined sugar. Among the principal manufactured articles may be enumerated Brussels carpets, which are unrivalled for elegance; fine lace and thread, made from the finest flax, so valuable that it sometimes fetches £400 sterling per pound; damask table-linen, and other linen cloth, paper, oil-cloth, india-rubber articles, musical instruments, embroidery, ribbons, hats, and various other articles enumerated among the exports. Both as regards exports and imports, its chief customers are France, England, Netherlands, and Germany. The articles sent to England are silk manufactures to the value of nearly £2,250,000, flax, yarn, and dairy produce, amounting, in 1873, to £8,250,000. We send to it, in return, woollen stuffs and machinery, to the value of £2,000,000. At Seraing, near Liège, is one of the most extensive ironworks in Europe, employing 5000 artisans: here are manufactured cannons, firearms, steam machinery, and locomotives.

Inland Communication.—Considering its size, Belgium is better furnished with *Railways* than any other European country.

From Mechlin, as the centre of the entire system, one main line proceeds S.W. by the capital to Mons, and then to France, where it connects with the Great Northern to Paris; a second S.E. to Liège and Cologne; a third N. to Antwerp and Rotterdam; a fourth W. by Ghent and Bruges to Ostend. Another main line connects Antwerp, Ghent, Tournay, and Lille (in France); and the only other we can specify unites Courtrai, Mons, Namur, and Liège. These various lines have been constructed at the expense of the Government, and have powerfully contributed to develop the internal resources of the country. In 1874, the number of miles open for traffic was 2105, yielding a clear revenue of £3,000,000. The country is also largely intersected by excellent *Canals*, many of which admit merchant vessels. The chief of these are the Bruges and Ghent Canal, which communicates with those of Damme and Ostend at Bruges, and at Ghent with another canal, which proceeds north to the estuary of the East Scheldt; and those which connect the Maas with the Scheldt—amounting together to nearly 300 miles. The two principal rivers, the Maas and Scheldt, are navigable through the whole Belgian territory. The public *Roads* are also numerous, broad, and well paved. Belgium has no **Foreign Possessions**, Holland having retained all the colonies when, in 1830, the two countries were disjoined.

HOLLAND, OR THE NETHERLANDS.

Position and Boundaries.—The Kingdom of the Netherlands is bounded on the N. and W. by the North Sea, S. by Belgium, and E. by Prussia; but the Grand-Duchy of Luxembourg,* properly belonging to Germany, lies S. E. of Belgium, between Belgian Luxembourg and the Moselle. Lat. 49° 26′—53° 34′ N.; or, omitting Luxembourg, lat. 50° 46′—53° 34′ N.; lon. 3° 24′—7° 12′ E.

* In case of war, this province is *neutral*, under the protection of the Great Powers.

Amsterdam, the commercial capital, near the centre, is nearly on the same parallel of latitude as Tralee, Cambridge, Hanover, Berlin, and Warsaw; and on the same meridian as Brussels, Lyon, and Minorca. The form approaches a rhomboid, with deep indentations at the three angles washed by the sea. Length of east side, 187 miles; breadth along the Belgian frontier, 117 miles. The coast-line is extremely irregular, especially in the N., where the sea has made serious encroachments on the land. Length, including the larger indentations, about 500 miles, or 1 mile of coast to each 27 miles of surface.

Area and Population.—Including Limbourg and Luxembourg, the area is 22,119 sq. miles, or nearly thrice the size of Wales. Population (in 1873) 3,913,500, being 275 persons to each sq. mile. The western provinces (N. and S. Holland) are the most populous parts of the kingdom, and contain the largest towns; while Drenthe, in the N.E., partly occupied by heath and waste land, is the least populous.

Political Divisions.—Holland is divided into 12 provinces, including the two duchies of Limbourg and Luxembourg.*

North Holland.†—AMSTERDAM 281 (Amstel and Y), Haarlem 31 n., Zaandam or Saardam 12 (Y), Alkmaar 11, Helder 20 (Great Canal), Hoorn 10 (Zuyder Zee).

Towns between 5000 and 10,000 inhabitants.—Nieuwer-Amstel, Enkhuizen.

South Holland.—THE HAGUE 93, Delft 22 (Schie Canal), Leyden 40 (Old Rhine), Schiedam 20, Rotterdam 123, Dort 25 (Maas), Gouda 15 (Rhine, *Yssel branch*).

Brielle, Vlaardingen, Gorkum.

Zeeland.—MIDDLEBURG 16, Flushing 11 (W. Scheldt).

Goes, Zierikzee.

North Brabant.—BOIS-LE-DUC 25 (Dommel), Breda 15 (Merk), Tilburg 24 (Gt. Aa).

Bergen-op-Zoom, Oosterhout.

Utrecht.—UTRECHT 60 (Old Rhine), Amersfoort 14 (Eem).

* The Republic of the Seven United Provinces, so celebrated in history, was formed by the League of Utrecht in 1579, and consisted of Holland, Zeeland, Utrecht, Gelderland, Overyssel, Friesland, and Gröningen; to these were afterwards added, by conquest or treaty, Drenthe and North Brabant, and in 1839 the eastern parts of Limbourg and Luxembourg.

† The following rules will aid the pupil in pronouncing Dutch proper names:—
a, e, i, o, u, are sounded as in German.
aa or *as* = *a* in far; as Haarlem, Alkmaar, also spelled Haerlem, Alkmaer (*Har'lem, Alk-mar'*).
eeu = *u* in rule; as Leeuwarden (*Loo'war-den*).
ie = *i* in me; as Vlieland (*Vlee'land*).
ij or *y* = *ī* in my; as Y, Yssel, Dyle, or Ij, Ijssel (*Eye, Isel, Dile*).
oe = *oo* in food; Coevorden (*Koo'vor-den*).
oo = *ō* in bŏrne; as Hoorn (*Hŏrn*).
ui, uy = *ī* in my; Geertruidenberg, Zuyder Zee (*Ger-try'den-berg, Zy'der-Zee*). Others make it = *eu* in German, or *oi* in voice.
d final = *t* in English; as Zeeland (*Tsee'lant*).
ch = *k*: as Utrecht (*Oo'trekt*).
sch = *sk*; Schelt, Schiedam (*Skelt, Skee-dam'*).
th = *t*: Drenthe (*Dren'te*).
z = *ts*; Zwolle (*Tswol*).

Gelderland.—ARNHEM 33 (Rhine), Nimeguen 23 (Waal), Zutphen 15 (Yssel).
Thiel, Harderwyk, Nykerk.

Overyssel.—ZWOLLE 21 (Zwarte-Water), Kampen 15, Deventer 17 (Yssel).
Raalte, Enschede.

Friesland.—LEEUWARDEN 25, Harlingen 10 (Leeuwarden Canal).
Franeker, Sneek.

Gröningen.—GRÖNINGEN 37 (Hunse).

Drenthe.—ASSEN 5 (Hoorn Diep), Meppel 7 (Reest).

Dutch Limbourg.—MAESTRICHT 28 (Maas).
Venlo, Ruremonde, Weert.

Luxembourg (S.E. of Belgium).—LUXEMBOURG 15 (Alzette, *affl.* Moselle).

Descriptive Notes.—There are only two towns in the Netherlands that contain upwards of 100,000 inhabitants (Amsterdam, Rotterdam); two between 100,000 and 50,000 (The Hague, Utrecht); fourteen between 50,000 and 20,000 (Leyden, Gröningen, Arnheim, Haarlem, Maestricht, Leeuwarden, Bois-le-Duc, Dordrecht, Nimeguen, Delft, Zwolle, Tilburg, Schiedam, Helder); and twelve between 20,000 and 10,000.

Amsterdam, the capital, and by far the largest city in the kingdom, at the confluence of the Amstel with an arm of the Zuyder Zee, is one of the most important commercial cities in Europe. It is built of bricks, in the form of a crescent, and supported by piles of wood driven into the alluvial soil. In the middle of the thirteenth century it was merely a collection of fishermen's huts, but it now contains 265,000 inhabitants, and is a place of great wealth. Here are vast storehouses filled with the most valuable products of both hemispheres, immense shipbuilding docks, and numerous literary and scientific institutions. It is a great depot for the commodities of the East and West Indies, with which it carries on an extensive trade through the Dutch colonies and its own trading companies. **Haarlem** is the centre of the Dutch trade in bulbous roots and flower-seeds, grown in extensive nursery-grounds in the vicinity; it has numerous manufactures, chiefly cotton and bleaching; and is memorable for the siege it sustained against the Spaniards in 1572. The cathedral of St Bavon contains the largest organ in Europe, and in the market-place stands the statue of Lawrence Coster, a native of the town, and the reputed inventor of the art of printing (1440). **Zaandam,** where Peter the Great, of Russia, wrought as an artisan in the dockyard. **Hoorn,** the birthplace of Tasman, who discovered New Zealand and Tasmania, and of Schouten, who discovered Cape Horn. **Alkmaar,** a fortified town on the Great Canal; near it Camperdown, off which Admiral Duncan defeated the Dutch fleet under De Winter. **Helder,** a strong fortress at the north extremity of the province, commands the principal entrance to the Zuyder Zee. **The Hague,** the usual residence of the King and States-General, may be regarded as the political capital. It is handsomely built, has a rich gallery of Dutch paintings, and is the birthplace of Huyghens the mathematician, and of William III. of England. **Delft,** long famous for its earthenware, the birthplace of the celebrated Hugo Grotius, critic and commentator. **Gouda** is celebrated for its cheese and tobacco-pipes, which are largely exported. **Leyden,** the literary capital, has a celebrated university, founded in 1575, much resorted to by students from other countries, and has the most extensive linen and woollen

manufactures in the country. **Schiedam,** noted for its gin or hollands, which is largely distilled here. **Rotterdam,** the second city of Holland in regard to population, wealth, and commercial importance, is more favourably situated for commerce than Amsterdam: has numerous canals intersecting the city in all directions, and capable of admitting the largest merchant vessels: here are numerous manufactories and distilleries of gin, and more English residents than in any other city in the kingdom: it is the birthplace of Erasmus, the restorer of letters in Western Europe. **Dort,** or **Dordrecht,** was at one time the capital of the Netherlands, and the original residence of the Counts of Holland: here was held the first meeting of the States-General in 1572, which declared the independence of the United Provinces, and the still more famous ecclesiastical synod in 1618, which condemned the doctrines of Arminius. **Middelburg,** near the centre of the island Walcheren, and **Flushing,** or **Vlissingen,** in the south, are strongly fortified seaports, with considerable trade: Flushing has magnificent docks and magazines; was bombarded by the English in 1809; and is the birthplace of Admiral De Ruyter. **Bois-le-Duc,** a fortified city at the junction of the Dommel and Aa, has numerous manufactures of linen, called *holland*. **Breda,** celebrated for the association of nobles formed in 1566, and called "The Compromise of Breda," and for the congress of 1667, has a military academy and arsenal, and is one of the strongest fortresses in the kingdom. **Utrecht,** the oldest city in the kingdom, contains a flourishing university; it is also noted for the "Act of Confederation" of 1579, and for the treaty of peace which terminated the wars of the Spanish Succession in 1713. **Nimeguen,** famous for the treaty of 1678 between France, England, and Holland. **Zutphen,** where the brave Sir Philip Sidney received his death-wound in 1586. **Zwolle:** near it is the convent where the celebrated Thomas-à-Kempis died in 1471. **Leeuwarden** contains the tombs of the Princes of Orange. **Gröningen,** a fortified well-built town, has a university and numerous other literary institutions. **Maestricht** is strongly fortified, and has manufactures of cottons, woollens, and paper. In the neighbouring hill of St Peter's are immense underground stone quarries, twelve leagues in circumference, traversed by about 20,000 passages intersecting in all directions, and forming an intricate labyrinth. In time of war the inhabitants of the surrounding country, with their cattle, find here a secure asylum. **Luxembourg,** capital of the Grand-Duchy of the same name, has a fortress of great strength, which was taken by Louis XIV. in 1684.

Capes and Islands.—Helder Point, the N. extremity of North Holland; the Hook of Holland, W. of South Holland. ISLANDS.—One group at the entrance of the Zuyder Zee, formerly all continuous, and forming a part of the mainland, but now broken up into the islands of Texel, Vlieland, Ter-Schelling, Ameland, Schiermonnikoog, Borkum, and Wieringen; the other in the delta of the Maas and Scheldt, and consisting of Walcheren, N. and S. Beveland, Tholen, Schouwen, all in province Zeeland; and Over-Flakkee, Voorne, Beyerland, and Ysselmonde, in S. Holland.

Seas, Bays, &c.—The Dollart, between Gröningen and Hanover; Lauwer Zee, N.E. of Friesland; Zuyder Zee,* E. of North Holland;

* In Cæsar's time the Zuyder Zee consisted of an inland lake named *Flevo*, and of a tract of country through which a river, 50 miles long, found its way to the

the Y, a branch of the Zuyder Zee, in the S.W. corner; estuaries of the Rhine, Maas, and Scheldt, five in number, in South Holland and Zeeland; Strait of Helder or Mars Diep, between the Helder and Texel.

Surface.—Among the most striking features of this country are its utter want of mountains, the perfectly level aspect of the greater portion of the surface, and the strange unnatural-looking depression of the remainder, which in many places is greatly beneath the level of the sea—thus originating the characteristic name of the country, *Holland*, signifying the "low country." These low portions are in some places protected from the inroads of the ocean by natural barriers of sand-downs, and in others by enormous artificial dykes of earth, faced with stones which have to be imported from other countries. These dykes rank amongst the most stupendous efforts of human industry to be found in any country. The country requires to be protected in a similar manner from the inundations of the rivers, the beds of which are generally above the level of the land.

River-Basins.—There are few distinct river-basins in Holland, as the waters of the Rhine, Maas, and Scheldt, its principal rivers, intermingle at their estuaries, and thus in reality form but one basin. The Vecht and the Hunse are the only other rivers of the kingdom deserving attention. The basins of these five rivers contain ten out of the twelve capitals of provinces, leaving only the Hague and Leeuwarden, which stand on canals that answer all the purposes of rivers.

Table of Rivers and Towns.—The towns of Belgium and the Netherlands given in the following table, in all 112 of 5000 inhabitants and upwards, include 53 above 10,000. These stand on 48 rivers (and canals), of which 12 enter the sea directly, the remainder being their affluents. All the rivers enter the North Sea.

Rivers.	*Towns.*
Hunse,	GRÖNINGEN.
Hoorn-Diep,	ASSEN.
Leeuwarden Canal,	Harlingen, *Franeker*, LEEUWARDEN.
Vecht,	*Enscheda.*
*Z*warte,	ZWOLLE.
Reest,	*Meppel.*
Rhine*,	Kampen, *Raalte*, Deventer, Zutphen, AMSTERDAM, Leyden, UTRECHT, ARNHEM, Gouda, *Gorkum*, *Thiel*, Nimeguen.
Moselle, *l*	Treves.
Sure, *l*	*Echternach.*
Alzette,	LUXEMBOURG.
Co. Gelderland,	*Harderwyk*, *Nyberk.*
Eem,	Amersfoort.
Amstel or Y,	AMSTERDAM, *N. Amstel*, n., Zaandam, Haarlem.
Zuyder Zee,	Hoorn, *Enkhuizen*, Helder.
Great Canal,	Helder, Alkmaar.
Schie Canal,	THE HAGUE, Delft.
Maas or Meuse*	*Briella*, *Vlaardingen*,

North Sea; but in 1282 a broad strait was formed (now the Strait of Helder) and the lake converted into a large arm of the sea. The Dollart, formed in 1277, the Bies Bosch in 1421, and Lake of Haarlem, owe their origin to similar inundations, one of which is said to have overwhelmed seventy villages, containing 100,000 inhabitants.

* For the full development of the Rhine, see under "Germany," as only the portion belonging to Holland and Belgium is given here. The Maas and Scheldt are given here in full.

Rivers.	*Towns.*
Maas or Meuse —*continued.*	Schiedam, Rotterdam, Dort, *Gorkum*, *Venlo*, *Ruremonde*, MAESTRICHT, LIEGE, Huy, NAMUR, *Dinant*, *Givet*, Charleville, MEZIERES, Sedan, Verdun, *St Mihiel.*
Merk, *l*	Breda.
Donge, *l*	*Oosterhout*, n.
Dommel, *l*	BOIS-LE-DUC.
Aa,	*Weert.*
Great Aa, *l*	Tilburg.
Niers,	Gladbach, Viersen, Rheidt.
Roer,	*Ruremonde*, Eschweiler, Duren.
Wurm,	Aix-la-Chapelle.
Jaar, *l*	*Tongres.*
Ourthe,	LIEGE.
Vesdre,	Verviers, Eupen.
Sambre, *l*	NAMUR, *Gilly*, Charleroi, *Jumetz*, *Maubeuge.*
Semoy,	ARLON.
Scheldt,	*Goes* n., *Zierikzee* n., *Bergen-op-Zoom*, MIDDELBURG, Flushing, ANTWERP, St Nicholas, *Themsche*, *Dendermonde*, Zele n., *Wetteren*, GHENT, *Oudenarde*, Renaix, Tournay, *Peruwelz* n., *Condé*, *Anzin*, Valenciennes, Cambrai.
Rupel and Dyle,	*Boom*, Mechlin, Louvain, *Wavre.*
Nethe,	Lierre, *Gheel.*
Little Nethe,	Turnhaut.
Senne, *l*	*Vilvorde*, BRUSSELS, *Hal*, *Waterloo* n., *Soignies*, *Nivelles.*
Demer,	*Diest*, HASSELT.
Geete, *l*	St Trond n., Tirlemont.
Duvine, *l*	*Hamme*, Lockeren.
Dender,	*Dendermonde*, Alost, *Grammont*, *Lessines*, *Ath*, Leuze.
Lys, *l*	Courtrai, Menin, *Werwick*, Tourcoing n., *Commines*, *Warneton*, *Armentières*, Bailleul n., *Merville*, *Aire.*
Mandel, *l*	Thielt, *Meulebeke*, *Ingelmünster*, *Iseghem*, *Roulers.*
Deule,	Roubaix n., LILLE, *Carvin-Epinoy*, *Lens.*
Beurre,	*Hazebrouck.*
Lawe,	*Bethune.*
Scarpe, *l*	Douay, ARRAS.
Haine,	*Pâturages*, MONS, *Binche.*
Selle,	*Solesmes*, *Le Cateau*
Ostend Canal,	Ostend, BRUGES.
Yser,	*Thourout.*
Yperlee,	Ypres.

Lakes.—None of importance since Lake Haarlem (in North Holland) was drained, except the Bies Bosch in North Brabant, which covers an area of 36 sq. miles. But there are numerous small lakes in Friesland, as Plussen Meer, Slote Meer, Sneeker Meer, and Bergum Meer. Forty small lakes in North Holland, and as many in South Holland, have been drained by means of windmills, the steam-engine not being employed for want of coal. Including Lake Haarlem, 350 sq. miles of admirable pasture-land, called *polders*, have thus been reclaimed.—See under "Seas and Bays."

Climate.—The climate of Holland is raw, damp, cold, foggy, and extremely disagreeable to foreigners. The winds blow incessantly, as if conscious that they have a twofold duty to perform—to carry off the stagnant vapours, and to keep several thousands of windmills in constant operation. It not unfrequently blows a perfect hurricane from the W. or S.W., overwhelming the land with fogs injurious to vegetation, and threatening to overthrow every bulwark which the labours of centuries have erected. The mean annual temperature at Amsterdam is 49°.8; of winter, 35°.6; and of summer, 64°.4. Annual rain, 26 inches; number of rainy days, 170. The winters are severe, the sky being generally overcast, bright days rarely exceeding 40 in the year. Though little snow falls, the frosts are intense; the Zuyder

Zee is frequently frozen over in January, and the Great Helder Canal for three months in the year.

Geology and Minerals.—The rocks consist almost exclusively of tertiary and super-tertiary strata, except in Luxembourg. Except in Limbourg and Dutch Luxembourg, coal is absent, and stones of any size are rarely seen in the soil. Minerals comprise immense deposits of turf: potter's clay, brick-clay, fuller's earth, and a little bog-iron, are found, but there are no other minerals. Building-stones are imported from Norway for the erection of piers, and for facings to the immense earthen dykes. The houses are usually built of brick, and of timber from the German forests, which is conveyed down the Rhine in immense rafts, varying from 700 to 1000 feet in length, from 50 to 90 in breadth, and directed by some hundreds of labourers, who construct a village of timber huts on its surface.

Botany, Agriculture, and Zoology.—The botany of the Netherlands is much the same as in other European countries under the same latitude; but, as might have been expected, aquatic plants are more varied and numerous than elsewhere, and though there are no natural forests, plantations of oak, elm, beech, &c., are by no means rare; while the numerous lines of canal are usually lined with rows of willows and poplars. Agriculture forms but a subordinate branch of rural industry, as the country is naturally better adapted for pasturage than for corn crops, the latter being usually quite insufficient for home consumption. The principal grain crops are rye, buckwheat, barley, and oats, together with some wheat in the southern provinces. Horticulture has attained a high degree of perfection, especially at Haarlem, which largely exports flower-roots and seeds. Other important crops are potatoes, flax, hemp, rape-seed, clover-seed, madder, chicory, mustard, hops, beetroot, and tobacco. Live stock and dairy produce are exported very extensively, as also poultry and honey. ZOOLOGY: Few wild animals are found except the rabbit and hare, which are largely exported to London; waterfowl and reptiles are very numerous; storks and swans consider this country their home and their paradise; fish of various kinds abound on the coasts—as cod, turbot, sole, and other flat fish; there are extensive herring-fisheries, and numerous whale-ships annually visit the Greenland seas.

Ethnography.—The population of the Netherlands belongs exclusively to the Teutonic stock.

The four prevailing *languages* belong to the German branch of the Teutonic family, and are all closely allied to the German. The chief of these is the *Dutch*, which is the national language, and which is spoken by all classes of society. It is merely a dialect of the *Flemish*, and is spoken in N. Brabant, both languages having been originally the same, but the Dutch proper having been far more carefully cultivated. The *Frisic* spoken by the uneducated classes in Friesland, Heligoland, and parts of Prussia, is more nearly allied to the Hoch Deutsch, or modern German; and lastly, the *German*, spoken in Dutch Luxembourg. About two-thirds of the population are Protestants, and one-third Roman Catholics. The Dutch Reformed Church, by far the most numerous body of Protestants

(1,942,000), is Calvinistic in doctrine and Presbyterian in government; and the other most important denominations are the Lutherans, who amount to 64,000, and Jews 63,000. All forms of religion are freely tolerated, and all denominations placed on a perfect level. Primary education is conducted by the Government, and is generally diffused, there being one-eighth of the population constantly attending school, and nearly every child above ten years of age being able to read and write. The teachers are well paid, the fees are low, and the children of the poor are taught gratuitously. There are three universities—viz., those of Leyden, Utrecht, and Gröningen, the professors of which are paid by the State. The Dutch are proverbial for their cleanliness, frugality, industry, and attention to business; they are also distinguished for their love of freedom, of national independence, and for their courage and nautical skill. Though usually of a dull, phlegmatic temperament, they are charitable to the poor, faithful in all the domestic relations, and highly virtuous. Holland may be called the China of Europe in regard to the industry of the inhabitants, and mendicity is prohibited throughout the kingdom.

Literature.—Ever since the revival of learning in Western Europe, the Dutch have distinguished themselves in almost every department of knowledge, but more especially in philology, criticism, and theology. Of the vast number of learned men to whom the Netherlands have given birth, the following are a few of the most illustrious:—

POETRY: Johannes Secundus or Everard, James van Catz, Vondel, Gaspar, Brandt, William Bilderdyk. PAINTING: John van de Meer, surnamed "The Old," born 1627; another of the same name, styled "The Younger," famous for his pastoral scenes, born 1665; W. and D. Schellings, Limborch, Janssens, Moor. HISTORY: Dousa, Paul Merula, Heinsius, Bondam. JURISPRUDENCE: Vinnen, Leeuwen, Meerman, Grotius. PHYSICAL SCIENCE: John and Zachary Jansen, Huyghens, Almeloveen, Ruysch, Leuwenhoeck, Swammerdam, Sylvius, Boorhaave, Van Swieten, Gaubius, Camper, Van Swinden, Brugmans, S'Gravesande. MENTAL SCIENCE: Spinoza, Helvetius. PHILOLOGY: Heinsius, Golius, Leusden, Schrevelius, Perizonius, Burman, Hemsterhusius, Wetstein, Oudendorp, Valkenaer, Ruhnken, Lennep, Wyttenbach, Tollius, Sluiter. CRITICISM: Erasmus (born 1467), Erpenius, Drusius, Meursius, Gronovius, Clericus, Bos, Hoogeveen, Hugo Grotius. THEOLOGY: Arminius, Gomar, Episcopius, Jansenius, Cocceius, Philip van Limborch, Witsius, Gerard Brandt, Vitringa, Voetius.

History, Government, Finances, &c.—Holland is a constitutional hereditary monarchy. The legislative power is vested in the king and two chambers called the States-General, one of which consists of deputies elected by the people every three years, and the other of members nominated by the Crown for life. The reigning sovereign is William III., who ascended the throne in 1849. From the year 1000 to the end of the eleventh century, Holland was divided into duchies, counties, and imperial cities; was subject to the Counts of Flanders till 1383, and then to the Counts of Burgundy; became part of the empire of Charles V. in 1548; descended to his son Philip, and became an appanage to the crown of Spain; suffered severe religious persecutions in consequence; successfully asserted its independence in 1579, under William, Prince of Orange, and assumed the name of the "Seven United Provinces;" was conquered by the French in

1793, who established the Batavian Republic; was formed into a kingdom by Napoleon I., for his brother Louis, in 1806; became a department of France in 1810; was united to Belgium in 1813, under the name of the Kingdom of the Netherlands, and this arrangement subsisted till 1830, when Belgium became an independent monarchy; and, finally, by the treaty of London (1839), Belgium ceded to Holland the eastern parts of Limbourg and Luxembourg. The European *Army* in 1874 numbered 61,775 men and officers. The *Navy* consists of 84 steamers, and 16 other ships, carrying 673 guns. The *Public Debt*, in 1874, amounted to £77,276,000, being about £21 sterling to each inhabitant; the *Revenue* to £7,811,000; and the *Expenditure* to £8,060,585.

Commerce and Manufactures.—Commerce has ever been the most important element in the prosperity of the Netherlands. At one time it exceeded that of any other European State, and her foreign trade still remains inferior only to that of Great Britain. Her relative position with respect to other States, and her wonderful system of water-communication, have been the main causes leading to this result. In 1872, the exports amounted to £38,783,000 in value; of which £13,108,924 were sent to the United Kingdom, consisting chiefly of butter, cheese, live animals, oilcake, gin or hollands, bulbous roots, flower-seeds, linen, and refined sugar. The imports in the same year amounted to £50,000,000, of which £17,500,000 came from the British Isles, the principal articles being cotton and woollen manufactures. Her other principal exports are the products of her own colonies (as coffee, sugar, raw cotton, spices, tobacco, dried fruits, and tortoise-shell), which she exchanges for the corn, manufactured goods, wool, wines, and brandy of other European countries. Next to Britain her best customers are North Germany, Belgium, France, and Spain. In 1872, the number of vessels that entered and cleared was 1902, carrying 444,273 tons. The principal manufactures are linen, paper, woollen and silk cloths, gin, tobacco, snuff, leather, cordage, saltpetre, and tobacco-pipes, together with sugar-refining and shipbuilding.

Inland Communication.—For the most part the railways have been only recently constructed: one between Amsterdam and Haarlem, and thence to Leyden, the Hague, and Rotterdam; and another from Amsterdam to Utrecht, Arnhem, and the German frontier. In 1871, the number of miles open for traffic was 1,033. The *Canals* are very numerous, and unrivalled in magnificence. They are found along all the great dykes which serve as barriers to the ocean, and have generally an excellent road beside them. The following are only some of the most important:—The Great Canal, between Amsterdam and the Helder, 51 miles long, 125 feet broad, and 24 feet deep, admitting two frigates abreast; the Nieuwer Sluis, between Amsterdam and Utrecht; another from Amsterdam to Haarlem, Leyden, Delft, the Hague, Rotterdam, and Gorkum; and an immense canal from Bois-le-Duc to Maestricht. Passengers are conveyed along these canals at the rate of four miles per hour.

Foreign Possessions.—When Holland was disunited from Belgium (in 1830), the former retained all the colonial possessions, which have an aggregate area of 685,000 sq. m., and a population, in 1872, of 24,386,000. The African possessions consist of various settlements on the Guinea Coast: the Asiatic dependencies comprise Java (by far the most important, with an area of 50,000 sq. m., and a pop. of 17,000,000), parts of Sumatra, Bali, Lombok, Timor, Banda, Amboyna, Moluccas, Celebes, Borneo, the western half of Papua, Banka, and Rhio; while those in South America embrace the extensive territory of Dutch Guiana, with the islands Curaçoa and St Eustatius.

DENMARK.

Position and Boundaries.—N., the Skager Rack, which separates it from Norway; W., the North Sea; S., Schleswig; E., the Sound and Kattegat, which divide it from Sweden. Lat. 54° 35′—57° 45′ N.; lon. 8° 5′—12° 35′ E. Copenhagen, the capital (lat. 55° 40′), is on the same parallel with Edinburgh, Moscow, Ekaterinburg, Kamtschatka, and Nain in Labrador; while the central meridian passes through Christiania, Kiel, Gotha, Lucca, Elba, and Tunis.

Form and Coast-Line.—The form is extremely irregular, consisting of a part of the Cimbric peninsula and various groups of islands. Extreme length of the mainland, from the Skaw to Ribe, 140 miles; greatest breadth, from Elsinore on the Sound to the Horn in Jütland, 185 miles. The seaboard is very extensive, amounting, if we include the islands, to about 4000 miles, of which 800 miles belong to the mainland, which is greatly indented. The latter gives one mile of seaboard to every four miles of area, a ratio higher than in any country in Europe, save Greece.

Area and Population.—As the result of the late war between Denmark on the one side, and Prussia and Austria on the other, the duchies of Lauenburg and Schleswig-Holstein have been wrested from Denmark, and, by the Treaty of Prague (August 1866), have been incorporated with the Prussian dominions. The area now amounts only to 14,733 sq. miles, or twice the size of Wales; but including Iceland and the Faröe Isles, the whole amounts to 54,935 sq. miles. In 1870 the population was 1,784,741, or 120 persons to the sq. mile; but including Iceland and the Faröe Isles, the population amounted to 1,861,720.

Political Divisions.—Denmark Proper is divided into two provinces — viz., Jütland, or the peninsula, and the Danish Archipelago, between the mainland and Sweden. Iceland lies

700 miles W. of Norway, and 300 miles E. of Greenland; while the Faröe Isles are nearly midway between Iceland and Shetland.

Jütland.*—Aalborg 10 (Lymfiord), Aarhuus 11 (Molle Aa).

Towns between 5000 *and* 10,000 *of population.*—Fredericia, Horsens, Randers, Viborg.

Danish Archipelago.—COPENHAGEN 181, Elsinore 8 (E. coast of Zealand), Odense 14 (in the north of Fünen).

Slagelse, Roeskilde, in Zealand; Nyborg, Svendborg, in Fünen; Rönne, in Bornholm.

Iceland.—Reykiavik 1 (S.W. coast).

Faröe Isles.—Thorshaven 1 (S. coast of Strömöe).

Descriptive Notes.—**Aalborg** (Eeltown), near the mouth of the Lymfiord, deriving its name from the great number of *eels* found in its neighbourhood, has a school of navigation, a soap-manufactory, a herring-fishery, and steam communication with the capital. **Aarhuus** and **Randers**, on the east coast, are small manufacturing towns with considerable trade. **Copenhagen** (Dan. *Kjöbenhavn*, "Merchants' Haven,"), the capital of Denmark since 1441, and the centre of its commerce, is a city of 180,000 inhabitants, elegantly built on the Sound, and strongly fortified; has an arsenal, shipbuilding docks, &c., being the sole station for the navy; a celebrated university, several superb palaces, most of which are now converted into libraries, museums, and picture-galleries, among which may be mentioned the Museum of Northern Antiquities, and the Thorwaldsen Museum: Lord Nelson gained here a great naval victory over the Danish fleet in 1801, and in 1807 it was bombarded, and the Danish fleet taken to England. **Elsinore**, or **Elsineur** (Dan. *Helsingör*), on the Sound, at its narrowest part, and only 3 miles from the Swedish coast, having on the north the strong castle of Kronborg: here were levied, previous to 1857, "the Sound dues" on all foreign merchant-vessels entering or leaving the Baltic, which, in 1851, amounted to nearly 20,000 ships, yielding £154,000 of toll. **Odense**, the principal town in Fünen, has manufactures of woollens and iron wares. **Roeskilde**, the cap. of Denmark till 1441. **Reykiavik**, the capital of Iceland, with only 1200 inhabitants, is the principal town in the island; it is an archbishop's

* The following rules apply to Danish proper names:—

a, *e*, *i*, *o*, *u* = the same vowels in German and Italian; but *y* = German *ü*; and *w*, which is found only in derivatives from the German, = English *v*.

aa = *ô* in stone, as Aalborg, Aarhuus (*Ôl-borg*, *Ôr'hoos*).

æ or *ae* = *a* in fate, or German *ä*, as Aeroe, Faroe (*A'ro*, *Fa'ro*).

ie = *ee* in feet, or German *ie*, as Kiel (*Keel*).

io = English long *ü*, as Kioge, Lymfiord (*Ku'ghee*, *Lüm-fürth'*).

øi and *øy* = *i* in pine, or *ei* in German, as Eyder, Schlei (*I'der*, *Schli'*).

ü or *y* = *ü* in German, as Liimfiord or Lymfiord (*Lüm-fürth'*).

oe or *ô* = *ô* in German, as Rönne, Tönningen (*Rön'ne*, *Tön'ning-en*).

uu = *u* in rule, as Aarhuus (*Ôr'hoos*).

d between two vowels = *th* in this, or like Spanish *d* in a similar position, as Apenrade (*Ap-en-rà'the*).

g is always hard, but at the end of a word it is sounded very slightly, so as to resemble *h*, as Viborg (*Vee-borh*).

j = *y* in yes, as Jütland (*Yüt'land*).

n when followed by *g* is nasal, as Tönningen (*Tön'ning-en*)

v is usually = *v* in English, but after *a* it has a vowel sound, as Frederikshavn (*Fred-er-iks-haun'*).

see and the seat of a college. **Thorshavn**, the capital of the Farŏe Isles, consists of about 100 wooden huts.

Capes and Islands.—The Skaw, N.E. of Jütland; Horn, W. of Jütland; North Cape in the N.W., and Skagen in the S.W. of Iceland. *Islands.*—Zealand, Fünen, Alsen, Langeland, Aerŏe, Laaland, Falster, Moen, bet. Schleswig and Sweden; Bornholm, S. of Sweden; Anholt and Læsŏe, in the Kattegat; Iceland, E. of Greenland; Farŏe Isles, bet. Iceland and the Shetland Isles.

Iceland lies 700 miles W. of Norway, 300 E. of Greenland, and immediately S. of the Polar Circle; area, 37,800 square miles; population, 64,600. The surface is mountainous, the highest peaks rising 6000 feet above the sea-level. The whole island is of volcanic origin, and no fewer than thirty volcanoes are enumerated, eight of which have been active within the last hundred years. Of these, Mount Hecla, 5210 feet high, is the most celebrated. There are several boiling springs, one of which, the Great Geyser, throws a column of hot water from 80 to 150 feet high, and at the depth of 72 feet is 30° above the boiling-point. The winters are severe, but the mean annual temperature (40° Fahr.) is higher than in any other country in the same latitude. The island is destitute of trees, and no grain of any kind can be raised; but cabbage and potatoes are cultivated. Fish and birds are the chief support of the inhabitants. The Icelanders belong to the Scandinavian race. Their language, called Norse or Icelandic, is merely old Danish, and is the least-corrupted dialect of the Scandinavian family of tongues. The only commerce of the island consists in the exchange of wool, butter, skins, fish, and oil, for European manufactures. The *Farŏe Isles* consist of a group of twenty-two small islands, lying nearly midway between Iceland and Shetland, of which seventeen are inhabited: area, 510 square miles; population, 8651. They are of trap formation; the coasts are steep and rugged, and the interior mountainous. The winters are very mild; the summer is moist and foggy; longest day, twenty hours—shortest, four hours. Barley is the only grain that can be cultivated. The inhabitants, who are Scandinavians, occupy themselves in fishing, fowling, and tending sheep. Thorshavn, the capital, is a mere village.

Bays, Straits, and Fiords.—Skager Rack, bet. Jütland and Norway; Kattegat, bet. Jütland and Sweden; the Sound, bet. Zealand and Sweden; Great Belt, bet. Zealand and Fünen; Little Belt, bet. Fünen and Schleswig; Lymfiord, Nyssum Fiord, Kingkiŏbing Fiord, in Jütland; Odensee Fiord, in Fünen; Ise Fiord, in Zealand.

Surface.—There are no mountains, or even hills, either on the mainland or in the adjacent islands; the surface is one uniform plain, elevated only a few feet above the sea, with a few eminences rarely exceeding 500 feet, the Himmelsberg alone attaining an elevation of 550 feet. Iceland, however, is highly mountainous; Snäfell, 6862 feet; Oræfajökull, 6426 feet; and Hecla, 5210 feet. The highest summit in the Farŏe Isles attains an elevation of 2864 feet.

Lakes.—These are extremely numerous, but all of them very small: the most important are Mossŏe and Fiel, in Jütland; Arve and Tis, in Zealand.

Climate.—The climate is considerably more severe than in the British Isles, though much milder than in Germany, notwithstanding its higher latitude, but very humid and cloudy: storms are rare and of short duration; average rainy days, 137; snowy days, 32; prevailing winds, W. in spring and summer, and S.W. in winter and autumn. Mean annual temperature at Copenhagen, 46° 56′; winter, 31° 31′; and summer, 62° 7′.

Geology and Minerals.—The rock-formations are almost wholly tertiary; but small patches of secondary are found in Jütland, Zealand, and Bornholm; trap-rocks in the Faröe Isles, and trap and volcanic rocks in Iceland, enclosing numerous interesting minerals, as green-earth, galactite, lava, pitchstone, &c. Denmark is peculiarly devoid of minerals: an inferior variety of coal, with blue marble, potter's clay, and building-stone, are met with in Bornholm, but peat is the general fuel throughout the kingdom; and sulphur, green-earth, lava, and basalt are abundant in Iceland.

Botany and Agriculture.—The indigenous vegetation does not differ essentially from that of N. Germany. Forests are not extensive, are mostly confined to the east coast and islands, and usually consist of ash, alder, oak, birch, beech, and fir. In Iceland, forests were formerly numerous, but it is now destitute of trees, except a few stunted birches; its flora is nearly allied to that of Scandinavia, comprising mosses, lichens, and a few shrubs and other flowering plants. According to Vahl and Babington, the number of flowering plants in Iceland amounts to 414 species, of which 282 are dicotyledons. Denmark is pre-eminently an agricultural country; the soil, almost entirely alluvial, is well adapted for cultivation. The numerous marshy districts yield excellent pasturage: rearing of horses and cattle, and dairy produce, form the chief objects of rural industry. More corn is raised than is required for home consumption—the principal crops being rye, barley, oats, wheat, and buckwheat; besides potatoes, hemp, lint, tobacco, and oats. No grain of any kind can be raised in Iceland, but cabbage and potatoes are cultivated; and barley is the only grain that comes to maturity in the Faröe Isles.

Zoology.—Since the decline of the great forests the larger wild animals have disappeared; the wild-boar is sometimes met with, and deer, stags, roes, hares, foxes, martens, polecats, rats, and other small quadrupeds, are abundant. Among *birds* may be mentioned the eider-duck, so famous for its down, the wild-goose, partridge, snipe, and thrush; swans in the Lymfiord; eagles and vultures are rarely seen. *Fishes* comprise the stromming—a small but much-prized species of herring—turbot, torsk, and salmon. Oyster-banks occur on the east coast of Jütland, and seal-fish on the island of Anholt; the cod, salmon, and whale fisheries of Iceland and the Faröe Isles are extensive.

Ethnography.—The Danes, or Normans, belong to the Scandinavian branch of the Teutonic family, and speak Danish, a Scandinavian tongue closely allied to the Icelandic, Swedish, and Faröese. The Icelandic, or Norse, also called the Scandinavian Proper, is merely old Danish, and is the least-corrupted dialect of the Scandinavian family of tongues; but its pronunciation is harsher than the Danish, which is, perhaps, the softest language in Europe—the consonants being pronounced so softly as to be almost imperceptible.

Religion, Education, and National Character.—Christianity became the national religion under Canute the Great, in the beginning of the

eleventh century; the Lutheran forms the established religion, and embraces nine-tenths of the population, but other sects are freely tolerated. Education is widely diffused, attendance at the primary schools being compulsory and gratuitous; and every adult inhabitant can read and write. There are about 20 secondary or higher schools distributed over the kingdom, where fees are paid and where attendance is optional; the sole university now is that of Copenhagen, founded in 1478. The Danes are characterised by a strong, well-built, muscular frame, with regular features, blue eyes, and light hair; not easily roused, but susceptible of strong feelings; of a patient disposition, and requiring much time for deliberation; more remarkable for common-sense than for wit, and highly virtuous.

Literature.—The following list includes only a few of the most eminent literary names in Denmark:—

POETRY: Baron Holberg, the dramatist and historian; Ewald, the famous lyric poet; Falster, Sneedorf, Tullen, Wessel, Oehlenschläger, Baggesen, Hertz. HISTORY: Sueno, Saxo-Grammaticus, Holberg, Suhm, Möllmann, and B. G. Niebuhr. GEOGRAPHY AND TRAVELS: Carsten Niebuhr, and Chevalier Brönstadt. SCIENCE: Tycho Brahe, the eminent astronomer; Oersted, the electrician; Schouw, the botanist; Rask, and J. Olshausen, the philologists; Gruntvig, Petersen, and Rafn, the archæologists; Mynster, Möller, Lindberg, Treschov, Smith, and Twesten, the theologians. PHILOSOPHY AND CRITICISM: Rothe, Rahbek, and Kraft. FINE ARTS: Thorvaldsen, the eminent sculptor; Hausen and Malling, the architects; Tuel, the portrait-painter; Gebauer, the animal-painter; Eckersberg, the historical painter; Dahl, the landscape-painter. ROMANCE: Ingemann, Blicher, Kruse, and Hauch.

Government, &c.—Denmark is a limited constitutional monarchy, the executive power being in the king and his responsible ministers. The *Rigsdag* or Parliament is composed of two houses—the *Landsthing* or Upper House, consisting of 66 members; and the *Folksthing* or House of Commons, containing 101 members; being 1 for every 16,000 of the population. The Revenue for 1875 amounted to £2,728,000; the Expenditure to an almost equal sum; and the Public Debt to £13,238,000. In 1874, the Army consisted of 40,008 men; and the Navy of 31 steamers, 1 frigate, 1 corvette, 1 brig, and 6 ironclads, carrying in all 314 guns.

Commerce and Manufactures.—The commerce of Denmark is not so extensive as its favourable position would warrant us to expect. There being few good roads in the interior, the coasting trade is very considerable. Its foreign commerce is chiefly with Germany, Britain, Sweden, and Russia. The chief exports are butter, bacon, hams, flour, hides, skins, corn-meal, oilcake, horses, and cattle; while the imports consist of woollens, silks, cottons, salt, iron, hardware, wine, fruit, tea, and articles of colonial produce. In 1873, Denmark exported to Britain produce to the value of £3,570,000, which mainly consisted of oats, barley, oxen, bulls, butter, bacon, flour, hides, oilcake, cattle, and sheep. Of British exports to Denmark, the principal are coal and iron, amounting together to £1,065,000, and other articles to the value of £11,600,000. The articles we send to Denmark are those which we can best spare, while those which we

receive from her are what we stand most in need of. There being no coal, and but little water-power in the country, Manufactures are few in number and of limited extent, the metals being all imported. The peasantry manufacture for themselves all the linen and woollen clothing they require, as well as utensils and articles of furniture. Some silk and cotton goods are manufactured in the large towns, and brewing and distilling are extensively prosecuted; while in the capital are several establishments for manufacturing tobacco and porcelain, and for sugar-refining.

Internal Communication.—*Roads* are very inferior, owing to the level and alluvial character of the country. There are three principal *canals*—one connecting the Lymfiord with the North Sea, one in Zealand, and another in Fünen; while the country is largely benefited by the Schleswig Canal, connecting the Eyder with the Baltic. There are several lines of railway now in operation—viz., one from Aalborg, on the Lymfiord, to Randers; a second from Aarhuus to Viborg and the W. coast of Jütland; a third crossing the island Fünen, from Odense to Middelfart; a fourth from Copenhagen to Elsinore; and a fifth from the capital, by Roeskilde, to Korsör on the W. coast of Zealand. In 1867 there were 296 miles of railway in operation.

Foreign Possessions.—Besides Iceland and the Faröe Islands, which have been already noticed, Denmark possesses the extensive region of Greenland, with its thirteen settlements and two mission stations, the principal of which are Frederikshaab, Julianshaab, and Good Hope; Disco Island, in Greenland; St Croix, St Thomas, and St John, in the W. Indies. The establishments on the Guinea coast were purchased by Britain in 1850; the town of Tranquebar, with its districts on the Coromandel coast, and the town of Serampore in Bengal, were transferred to Britain in 1846; while the Nicobar Islands, in the Bay of Bengal, were abandoned in 1848 on account of their insalubrity. The extra-European portion has an area of 46,878 sq. m., and a population in 1874 of 47,500.

GERMANY.

GERMANY (Germ. *Deutschland;* Fr. *Allemagne*), in its widest acceptation, is an ethnographical, rather than a political, term. It properly denotes that extensive region in the heart of Europe occupied by the German race, which extends from the Baltic and North Sea to the Alps and Adriatic, and from the Rhine and Meuse on the W. to the Niemen and Carpathians on the E. It is of a square compact form, is bounded by the parallels of 44° 46′ and 55° 30′ N., and by the meridians of 6° and 19° E.; has an area of about 280,000 sq. m., and a population

(1868) of about 50,000,000. From the ninth century till 1806, or for a period of 1000 years, Germany formed an empire, governed by a sovereign elected by the different states situated within this wide domain, whose capital was Vienna. Its first and most illustrious sovereign Charlemagne, son of Pepin-le-Bref, king of the Franks, and grandson of Charles Martel, was crowned emperor of the W. in A.D. 800. His dominions extended from the Ebro to the mouth of the Elbe, from the Atlantic to the mountains of Bohemia and the Raab, and from the British Channel to the Volturno. The last emperor was Francis II. of Germany, who renounced that title in 1806, and became Francis I. of Austria. The empire was succeeded by the "Confederation of the Rhine," established at Paris under the protection of Napoleon I., and consisting of the kings of Würtemberg and Bavaria, and several petty sovereigns. In 1815 the Congress of Vienna established "the Germanic Confederation," being an alliance between the thirty-four independent states (then comprehended in Germany), for the purpose of mutual protection and defence. In this Confederation, Austria was the most influential, as its territories embraced nearly a third of the whole extent of Germany, and the emperor of Austria presided over the Federal Diet, or Parliament, which sat permanently at Frankfürt-on-the-Main. In 1866, Prussia declared war against Austria, and the contest ended by Prussia expelling Austria from the Confederation and becoming herself the paramount power in Germany. The States that had aided Austria (Hanover, Nassau, Hesse-Cassel, Hesse-Homburg, Frankfürt) were annexed to the Prussian dominions, which now embrace in addition Schleswig, Holstein, and Lauenburg, wrested from Denmark, together with portions of Hesse-Darmstadt and Bavaria. The whole of Northern Germany from the Baltic, Jütland, and the North Sea, as far south as the river Main, was then formed into the "North German Confederation" under the control of Prussia; while South Germany, numbering five States, formed a loosely-connected group under the nominal ascendancy of Bavaria. The two divisions were, moreover, connected together by treaties of alliance, by which Prussia, in the event of war with any foreign State, was virtually placed in command of the armies of the Southern States. The French Emperor, jealous of the rapidly increasing power of Prussia, waged war against that state (July 1870), and despatched a powerful army to the Rhine frontier. But Prussia, fully prepared for the contest, rallied around her all the minor states, and routed the French armies in a series of sanguinary engagements. In September 1870, Napoleon, after the disastrous defeat at Sedan, unconditionally surrendered to King William

of Prussia; when 39 generals and 100,000 soldiers were made prisoners. Soon after this, Paris was besieged, and France was compelled to make peace; agreeing to cede three departments (Haut Rhin, Bas Rhin, and Moselle) to Germany, and to pay a war indemnity of £200,000,000. King William was proclaimed Emperor of Germany on the 18th January 1871; and the once famous Germanic Empire was reconstructed in all its pristine grandeur.

GERMAN EMPIRE.

Position and Boundaries. — N., the Baltic, Jütland, and North Sea; W., the Netherlands, Belgium, and France; S., Switzerland, the Tyrol, and Bohemia; E., Russia. Lat. 47° 20′—55° 50′ N.; lon. 5° 57′—23° E.

Berlin, near the centre, is on the same parallel as Cambridge, Amsterdam, Hanover, Warsaw, and Samara; and on the same meridian as Copenhagen, Neu-Strelitz, Trieste, Naples, Malta, and Tripoli. The coast-line, though extensive, is confined to the northern frontier—850 miles thereof belonging to the Baltic, and 350 miles to the North Sea. For the most part the coast is very low (especially in Pomerania, Hanover, and Oldenburg), and requires to be fenced with dykes, as in the Netherlands, but in Mecklenburg it is considerably bolder. The principal indentations of the Baltic coast are the Gulfs of Danzig and Lubeck, and of the North Sea coast, the estuaries of the Elbe and Weser.

Area and Population. — The united area of the 26 states is estimated at 213,370 sq. m., or one and three-fourths that of the British Isles; while the aggregate population, in 1872, amounted to 41,085,516, being one-third more than the population of the United Kingdom, and giving 194 persons to each sq. m. The area and population of each of the states will be found in the following table:—

State.	Area in sq. m.	Population in 1872.
Kingdom of Prussia,	135,904	24,693,065
Kingdom of Saxony,	5,777	2,556,244
Grand-Duchy of Mecklenburg-Schwerin,	5,188	357,877
Grand-Duchy of Oldenburg,	2,428	314,995
Duchy of Brunswick,	1,424	311,715
Grand-Duchy of Saxe-Weimar,	1,403	286,183

State.	Area in sq. m.	Population in 1872.
Grand-Duchy of Mecklenburg-Strelitz,	1,052	96,982
Duchy of Anhalt.	1,026	203,354
Duchy of Saxe-Meiningen,	956	187,884
Duchy of Saxe-Coburg-Gotha,	759	174,339
Duchy of Saxe-Altenburg,	510	142,122
Principality of Lippe-Detmold,	438	111,153
Principality of Waldeck,	433	56,218
Principality of Schwartzburg-Rudolstadt,	374	75,523
Principality of Schwartzburg-Sondershausen,	332	67,191
Principality of Reuss-Schleitz,	320	69,032
Principality of Schaumburg-Lippe,	171	32,051
Principality of Reuss-Greitz,	145	45,094
Free City of Hamburg,	136	338,974
Free City of Lubeck,	127	52,158
Free City of Bremen,	74	122,565
Kingdom of Bavaria,	29,342	4,864,402
Kingdom of Wurtemburg,	7,533	1,818,484
Grand-Duchy of Baden,	5,912	1,461,428
Grand-Duchy of Hesse-Darmstadt,	2,962	852,343
Elsass-Lothringen,	4,500	1,597,219
Total, German Empire,	213,370	41,085,516

In consequence of the political changes above described, we must first treat of Prussia, then of the smaller German States north of the Main, and lastly of Southern Germany.

I. Kingdom of Prussia.

Prussia, as now enlarged, consists of the following eleven provinces:—

Prussia Proper.—Königsberg 112, Insterberg 13 (Pregal), Memel 18, Tilsit 17 (Niemen), Elbing 28 (Elbing), Danzig 90, Graudenz 13, Thorn 16 (Vistula), Braunsberg 10 (Pasarge).

Towns between 5000 and 10,000. — Gumbinnen, Marienburg, Marienwerder, Kulm.

Posen.*—Posen 53 (Wartha), Lissa 10 (Obra), Rawitsch 10 (Bartsch), Bromberg 27 (Brahe).

Inowrazlaw, Meseritz, Gnesen, Kempen, Fraustadt, Kratoszyn.

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* Rules for pronouncing Polish proper names:—

The Vowels are, in general, pronounced as in German; but *é* and *ó*, when accented, are like *a* in *fate* and *oo* in *good*; *w* is equal to *v* in English.

The Consonants *b*, *d*, *f*, *h*, *k*, *l*, *m*, *n*, and *p* have the same sounds as in English.

c = *ts*, as Kielce, Bistrica (*Keel'tse*, *Bis-trit'sa*).

ch = *ch* in the Scotch and German, as Bochnia, Chorostkow.

cz = *tsh* or *ch* in church, as Czernowitz, Drohobicz (*Tsher'no-vitz*, *Dro'ho-bitsh*)

g is always hard, as in the German.

Silesia.*—BRESLAU 208, Glogau 18, Brieg 13, Oppeln 11, Ratibor 13 (Oder), Görlitz 31 (Lower Neisse), Hirschberg 10 (Bober), Grünberg 10 (Lunze), Liegnitz 20 (Katzbach), Schweidnitz 16 (Waestritz), Neisse 19, Glatz 12 (Neisse), Gleiwitz 12, Benthem 13 (Klodnitz).

Ohlau, Sagan, Sprottau, Bunzlau, Luben, Jauer, Goldberg, Striegau, Reichenbach, Oels, Strehlin, Münsterberg, Frankenstein, Neustadt, Leobschütz

Pomerania.—STETTIN 74 (Oder), Stargard 17 (Ihna), Stolpe 14 (Stolpe), Greifswald 18, Stralsund 27 (Str. of Gellen), Köslin 13 (Niesenbecke), Colberg 13 (Persante), Anclam 12 (Peene).

Demmin, Gollnow, Rugenwalde, Neu-Treptow, Greiffenberg.

Brandenburg.—BERLIN 826, Charlottenburg 13, Kottbuss 12 (Spree), Luckenwalde 12 (Nuthe), Brandenburg 26, Potsdam 43, Spandau 16 (Havel), Ruppin 12 (Rhin), Küstrin 10, Frankfürt 41 (Oder), Prenzlow 16 (Ucker), Landsberg 18 (Wartha), Guben 11 (Neisse), Sorau 10 (Bober).

Spremberg, Rathenow, Jüterbok, Perleberg, Wittstock, Schwedt, Wrietzen, Crossen, Königsberg.

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j = *j* in German, or *y* in English, as Jaslo, Jaworow (*Yas'lo, Ya-vor'ov*).
rz = *zh*, or French *j*, as Brzezany, Przmysl (*Bzha-za'ny, Pzhem'isl*).
sz = *sh* in shall, as Kratoszyn, Zamosz (*Kra-to'shin, Zä'mosh*).

The Polish is spoken in Prussian, Austrian, and Russian Poland, in the more elevated portions of Prussia Proper, and generally in the basins of the Niemen and Vistula. The sounds of the letters in Sclavonian, Bohemian, and Illyrian correspond, in general, with those of the Polish. The accent in Polish words of more than one syllable is uniformly on the penultimate, and it is the only Sclavonic tongue that contains nasal sounds like the French *en, in, on*, which are represented by the letters *a* and *e*, undermarked with an accent.

* Rules for pronouncing German proper names, with appropriate examples :—

VOWELS.—*a* long, as in far; short, as in fat. *e* long = *a* in fate; short, as in met. *i* long, as *i* in machine. *o* long, as in stone; short, as in yon. *u* long, as in rule; short, as in full.

DIPHTHONGS.—*ä* or *ae* = *a* in fate, as Grätz (*Graits*).
ai, ay, ei, ey = *ey* in eye, as Main or Mayn, Leine, Leyden (*Mine, Lī'nah, Lī'den*).
au = *ou* in hour, as Augsburg, Clausthal (*Ougs'boorg, Clous'tal*).
eu = *oi* in voice, as Reuss, Neuburg, Baireuth (*Roiss, Noi'boorg, Bī'roit*).
ie = *ee* in feet, as Wien, Nienburg, Wiesbaden (*Veen, Neen'boorg, Vees-bah'den*).
ö or *oe* = *eu* in French, or *ao* in Irish : there is no corresponding sound in English—Göttingen, Königsberg, Schönberg.
ü or *ue* = *u* in the French word *bruler:* it has no parallel English sound—*e.g.*, Münden, Nürnberg, Lüneburg.

The CONSONANTS are sounded as in English, with the following exceptions :—
d final = *t* in English, as Detmold, Gmünd, Stuttgard (*Det'molt, Gmünt, Stut'gart*).
c before *e, i, y* = *ts*, as Celle (*Tsel'leh*).
ch = Scotch *ch* or Irish *gh* in Loch Ness, Lough Foyle, but before *s radical* = *k*; as Eisenach, München, Sachsen (*I'zen-ach, Mün'chen, Sak'sen*).
g is hard before *e, i, y*, as Giessen, Meiningen (*Ghees'sen, Mī'ning-en*).
h is pronounced only at the beginning of a word or of a radical syllable ; when after a vowel, it lengthens the vowel, as Hanover, Jahde (*Han'o-ver, Yä'deh*).
j = *y* in yes, as Jena, Jaxt (*Ye'na, Yaxt*).
s between two vowels has the sound of *z;* but elsewhere it is always sharp, as Eisenach, Osnaburg (*I'zen-ach, Os-na-boorg*).
ss and *sz* = *s* in this, as Cassel, Giessen (*Cas'sel, Ghees'sen*).
sch = *sh* in shine, or *ch* in French and Portuguese, as Schleitz, Schwartzburg (*Shlites, Schwarts'boorg*).
th = *t*, as Gotha, Clausthal (*Go'ta, Clous'tal*).
v between two vowels is equal to *v* in English; elsewhere it is equal to *f* in life, as Hanover, Vogelberg (*Han'o-ver, Fo'ghel-berg*).
w is nearly equal to English *v*, as Waldeck, Wismar (*Val'deck, Vis'mar*).
z and *tz* = *ts*, as Zellerbach, Wartzburg (*Tsel'ler-bach, Varts'boorg*).

Prussian Saxony.—MAGDEBURG 84, Wittenberg 13, Torgau 12 (Elbe), Burg 15 (Ihle), Halle 49, Merseburg 13, Weissenfels 14, Naumburg 15 (Saale), Quedlinburg 16 (Bode), Halberstadt 25 (Holzemme), Aschersleben 15 (Eine), Eisleben 12 (Böse), Zeitz 14 (White Elster), Mühlhausen 17 (Unstruth), Nordhausen 20 (Zorge), Erfürt 42 (Gera), Eilenburg 10 (Mulde).

Schönebek, Barby, Gardelegen, Haldensleben, Kalbe, Langensaltza, Sangerhausen, Heiligenstadt, Suhl.

Hanover.—HANOVER 104, Göttingen 13 (Leine), Hildesheim 13 (Innerste), Celle or Zell 15 (Aller), Clausthal 10 (Zellerbach), Lüneburg 16 (Ilmenau), Emden 12 (Emden canal), Osnabrück 18 (Hase), Harburg 13 (Elbe).

Bimbeck, Osterode, Verden, Goslar, Nienburg, Hameln, Münden, Stade, Norden, Leer, Aurich.

Schleswig-Holstein and Lauenburg.—GLUCKSTADT 5, Altona 74 (Elbe), Kiel 32 (Kiel Fd.), Schleswig 11 (Schlei Fd.), Flensburg 22 (Flensburg Fd.)

Rendsburg, Itzehöe, Elmshorn, Preetz, Hadersleben.

Hessen-Cassel and Homburg.*—CASSEL 41, Fulda 10 (Fulda), Hanan 17 (Main).

Homburg, Hersfeld, Eschwege, Schmalkalden, Marburg.

Nassau,* Frankfürt, and Hohenzollern.—WIESBADEN 30 (Salzbach), Frankfürt 91 (Main).

Hechingen, Ems.

Westphalia.—MÜNSTER 28 (Ahe), Minden 18 (Weser), Herford 11, Bielefeld 17 (Werre), Paderborn 12 (Lippe), Söst 11 (Sösterbach), Dortmund 44 (Emster), Iserlohn 15 (Baarenbach), Bochum 11 n. (Ruhr).

Hamm, Lippstadt, Arnsberg, Witten.

Rhenish Prussia.—COLOGNE 125, Wessel 18, Crefeld 54 n., Düsseldorf 63, Neuss 11 n., Solingen 12 n., Bonn 24, Coblentz 27 (Rhine), Duisburg 14, Mülheim 14, Essen 32 (Ruhr), Remscheid 18 n., Elberfeld 65, Barmen 65 (Wipper), Treves 22 (Moselle), Aix-la-Chapelle 74 (Würm), Eupen 14 (Vesdre), Gladbach 19, Viersen 15, Rheids 12 (Niers); Eschweiler 14, Duren 10 (Roer), Saarbrück 13 (Saar), Kreuznach 12 (Nahe).

Emmerich, Cleves, Mühlheim, Neuwied, Rendsdorf, Lennep, Mayen, Saar-Louis.

Descriptive Notes.—The Prussian monarchy, as now extended, contains four cities of upwards of 100,000 inhabitants (Berlin, Breslau, Cologne, Königsberg): twelve between 100,000 and 50,000 (Danzig, Magdeburg, Frankfürt, Hanover, Stettin, Aix-la-Chapelle, Altona, Elberfeld, Barmen, Düsseldorf, Crefeld, Posen); twenty-four between 50,000 and 20,000 (Halle, Potsdam, Erfürt, Cassel, Frankfürt-on-Oder, Essen, Görlitz, Dortmund, Wiesbaden, Elbing, Stralsund, Coblenz, Bromberg, Duisburg, Brandenburg, Münster, Halberstadt, Kiel, Bonn, Gladbach, Flensburg, Treves, Nordhausen, Liegnitz); and eighty between 20,000 and 10,000.

Königsberg, capital of Prussia Proper, a populous and strongly-fortified city on the Pregel, near its mouth in the Frische Haff; it is the fourth city in Prussia in point of population; has shipbuilding docks, great trade in grain, numerous manufactures, chiefly woollens, cottons, linens, and silks, and a famous university; amongst its more illustrious professors may be mentioned Immanuel Kant, the famous metaphysician,

* These are now united into one province, and named Hessen-Nassau.

Olshausen, Von Bohlen, Gebser, Dinter, Lobeck, and Graff; its observatory has been rendered celebrated by the labours of the astronomer Bessel. **Memel**, the most northern town in the kingdom, at the entrance of the Curische Haff, strongly fortified, and with extensive trade in timber and corn. **Tilsit**, on the Niemen, memorable for the treaty between France, Russia, and Prussia in 1807, which deprived Prussia of all her possessions between the Rhine and the Elbe, and the greater part of Prussian Poland; nearly all of which were restored by the Congress of Vienna in 1815. **Elbing**, a fortified flourishing town, with considerable trade and manufactures. **Danzig**, a large fortified city near the mouth of the Vistula, one of the greatest corn-shipping ports in the world; great foreign commerce; the birthplace of Fahrenheit, the inventor of the mercurial thermometer. **Thorn**, a strongly-fortified town on the Vistula; the birthplace of Copernicus, the eminent astronomer, in 1473. **Posen**, a large fortified city on the Wartha, was at one time the capital of Poland; it is largely engaged in the export of agricultural produce. **Rawitsch** and **Bromberg** possess several manufactures, and an active transit trade: the Canal of Bromberg connects the Vistula with the Netze, an affluent of the Oder. **Breslau**, the second city in Prussia in point of population; the great emporium for the linens of Silesia; a great wool-market; numerous manufactures; trade in mining produce, Hungarian wines, and other merchandise; the birthplace of Wolff, the mathematician and philosopher; has a university adorned by the names of Von Cölln, David Schulz, Bernstein, Middledorpf, Wachler the historian, Schleiermacher the theologian, and Passow the lexicographer. **Glogau**, a strongly-fortified town on the Oder, with several manufactures, especially of sugar from beetroot. **Görlitz** has a Protestant college, and extensive manufactures of linen and woollen cloths. **Liegnitz**: here the Prussians, under Frederick the Great, totally defeated the Austrians in 1760. **Neisse**, a fortified town on a river of same name, has various printing establishments, and manufactures of linen and woollen cloths. **Stettin**, a populous and fortified city at the mouth of the Oder, and, next to Danzig, the chief seaport of the kingdom, with shipbuilding, and numerous manufactures, the chief of which is woollen. **Greifswald**, a fortified town, with a university. **Stralsund**, on the Baltic, a strongly-fortified seaport, with considerable trade. **Berlin**, the capital of the province Brandenburg and of the kingdom, is an elegant city, situated on the Spree, an affluent of the Havel, and containing 700,000 inhabitants; famous for the variety and extent of its manufactures, among which the most remarkable are its beautiful cast-iron articles called "Berlin jewellery," its paper, porcelain, and dye-works. There are numerous educational establishments, including the university, the most celebrated in Germany, though only founded in 1810: it is usually attended by about 1800 students; and among its professors are many of the most illustrious names in modern literature—as Neander, the celebrated church historian; Schleiermacher, Hengstenberg, Strauss, the neologist; De Wette, Marheinecke; Von Savigny, the jurist; Hegel, the metaphysician; Encke, the astronomer; Von Raumer, the historian; Karl Ritter, the prince of geographers; Bekker, the indefatigable editor of Greek and Roman classics; Böckh, the Greek philologist; Zumpt, the Latin grammarian; and Bopp, the renowned Orientalist, and author of the 'Comparative Grammar of the Indo-European Languages:' the royal library contains 600,000 printed volumes. Berlin is indeed the great centre of intellectual development in the north of Germany. **Potsdam** is, next to Berlin, the handsomest city in Prussia, the second royal residence in the kingdom,

the burial-place of Frederick the Great, and the birthplace of Wilhelm von Humboldt, the statesman and philologist. **Frankfürt** on Oder has extensive commerce in German and foreign produce, and is noted for its manufactures of woollen and silk fabrics, stockings, earthenware, sugar, &c. **Magdeburg**, an ancient and populous city, and the strongest fortress in the kingdom, has great trade, which is facilitated by numerous steamers on the Elbe. **Wittenberg**: here the Reformation commenced in 1517, and here are buried its great promoters, Luther and Melancthon. **Halle**, with a celebrated university adorned by the names of Gesenius, Tholuck, Ullman, Rödiger, Spener, Thomasius, Breithaupt, the brothers Michaelis, Cellarius, Baumgarten, Semler, Knapp, Wegscheider, and Meckel: Halle is also the birthplace of Handel the musician. **Merseburg**, and **Naumburg** the birthplace of Richard Lepsius, both on the Saale, are thriving industrious towns. **Quedlinburg**, the birthplace of Klopstock and of Karl Ritter. **Halberstadt** contains a superb cathedral and a Jewish synagogue. **Eisleben**, birthplace of Luther, 1483. **Zeitz**: rich copper-mines in the vicinity. **Muhlhausen** and **Nordhausen**, fortified towns, with manufactures of carpets, coarse linens, and woollens. **Erfurt**, with woollen and linen manufactures: its university (founded in 1378), where Luther was educated, and at one time the most celebrated in Germany, was suppressed in 1816, while the monastery of St Augustine, containing the Reformer's cell, is now an orphan asylum. **Hanover**, formerly cap. of kingdom of same name, is a well-built, trading, and manufacturing city, on the Leine, and the birthplace of the illustrious astronomer, Sir W. Herschel. **Göttingen**, the seat of a famous university. **Clausthal**, capital of the mining district of the Harz, with valuable lead and silver mines. **Luneburg**, a flourishing manufacturing town, with salt-pits and saline springs in the vicinity. **Emden**, the most commercial town in Hanover, with shipbuilding docks. **Osnabruck** is noted for the manufacture of coarse linens called *osnaburgs*. **Glcükstadt**, formerly cap. of the duchy of Holstein. **Altona**, an important trading and commercial city on the Elbe, opposite Hamburg, with shipbuilding docks, various manufactures, and an observatory. **Kiel**, at the eastern extremity of the Schleswig-Holstein Canal, is an important trading town, and the seat of a university. **Flensburg**, in the district Angeln, inhabited anciently by the Angles, who, along with the Jutes and Saxons, invaded Britain in A.D. 449, and gave England its present name. **Cassel**, formerly the cap. of the Electorate of same name, and **Hanau**, are thriving manufacturing towns. **Schmalkalden**, where the celebrated league was formed, in 1530, between the Protestant princes of Germany. **Wiesbaden**, formerly cap. of the duchy of Nassau, is one of the principal watering-places of Germany. **Frankfürt**, formerly a free city, and the seat of the Germanic Diet, is a populous commercial city on the Main, now chiefly noted for its extensive banking transactions: is the birthplace of Göthe, in 1749. **Münster**: here was concluded the Peace of Westphalia in 1648, which established the present system of European States, and secured religious liberty to the Protestants; and here John of Leyden, with his two accomplices, were suspended in iron cages in 1535. **Minden**: here Frederick of Brunswick defeated the French in 1759. **Dortmünd**, the seat of a mining board. **Iserlohn**, noted for its hardware goods. **Cologne**, with 125,000 inhabitants, is the third city in Prussia in point of population, and by far the most important in the western division of the kingdom: its position on the Rhine gives it great commercial facilities; famous for its distilled waters, called "Eau-de-Cologne," and for its magnificent Gothic cathedral, one of the finest

in Europe: here the monk Barthold Schwarz invented gunpowder in 1330; and here was born Rubens, the most famous painter of the Flemish school, in 1577. **Crefeld**, the principal town in Prussia for the manufacture of silk goods. **Dusseldorf**, a large commercial city, has a bridge of boats across the Rhine. **Bonn** has a celebrated university adorned by the names of Niebuhr, A. W. von Schlegel, Welcker, Freytag, Augusti, Nitsch, Bleek, and Gieseler: it is the birthplace of Beethoven the composer. **Coblentz**, at the confluence of the Rhine and Moselle, the former of which is crossed here by a bridge of boats, 485 yards long, has manufactures of cotton and woollen fabrics: on the opposite bank of the Rhine is the formidable fortress of Ehrenbreitstein. **Elberfeld** and **Barmen**, great seats of the cotton, silk, and thread manufacture, and famous for dyeing Turkey red. **Treves** (*Ger.* Trier), at one time the residence of Constantine the Great, is believed to be the oldest city in Germany: it contains numerous Roman remains, and maintains a brisk trade in corn, timber, and Moselle wines: here is exhibited a coat which the monks assert is "the seamless coat of the Saviour." **Aix-la-Chapelle** (*Ger.* Aachen), the residence and burial-place of Charlemagne; celebrated for its mineral baths, its treaties of 1668 and 1748, and the congress of 1818: here were crowned the emperors of Germany from 814 till 1531.

II. Saxony and the Smaller States.

Saxony.—Dresden 177, Meissen 10 (Elbe), Bautzen 12 (Spree), Leipzig 106, Plauen 21 (White Elster), Crimmitzchau 12, Werdau 10 (Pleisse), Reichenbach 11 (Goltsch), Eilenburg 10, Glauchau 19, Meerane 16 n., Zwickau 25 (Mulde), Freiberg 21 (Münzbach), Chemnitz 68, Annaberg 10 (Chemnitz), Zittau 14 (Mandau).
Oschatz, Pirna, Grimma, Lössnitz, Schneeberg, Dobeln, Rosswein, Nossen, Mittweida, Hainicken, Frankenberg, Zschoppau, Grossenhain.

Mecklenburg-Schwerin.—Schwerin 25 (L. Schwerin), Rostock 29 (Warnow), Güstrow 11 (Nebal), Wismar 13 (N. coast).
Grabow, Ludwigslust, Parchim.

Oldenburg.—Oldenburg 12 (Hunte), Berne 8 (Berne).

Brunswick.—Brunswick 58, Wolfenbüttel 10 (Ocker).
Helmstadt.

Saxe-Weimar.—Weimar 14 (Ilm), Eisenach 12 (Hörsel).
Jena.

Mecklenburg-Strelitz.—Neu-Strelitz 7 n. (Havel).

Anhalt.—Dessau 16 (Mulde), Bernburg 12 (Saale), Zerbst 11 (Nathe), Köthen 12 (Ziethe).

Saxe-Meiningen.—Meiningen 7, Hildburghausen 5 (Werra).

Saxe-Coburg-Gotha.—Gotha 18 (Leine), Coburg 11 (Itz).

Saxe-Altenburg.—Altenburg 18 (Pleisse).
Schmöllin, Ronneburg.

Lippe-Detmold.—Detmold 6 (Werra).

Waldeck.—Arolsen 2 (Aar).

Schwartzburg-Rudolstadt.—Rudolstadt 6 (Saale).

Schwartzburg-Sondershausen.—Sondershausen 6 (Wipper).
Arnstadt.

Reuss-Schleitz.—Gera 15 (White Elster).

Schaumburg-Lippe.—Bückeburg 4 (Aue).

Reuss-Greitz.—Greitz 11 (White Elster).

Free Cities.—Hamburg 304 (Elbe), Lübeck 40 (Trave), Bremen 83 (Weser).

Descriptive Notes.—In the twenty smaller states north of the Main there are two cities containing upwards of 100,000 inhabitants (Hamburg, Dresden); four between 100,000 and 50,000 (Leipzig, Bremen, Chemnitz, Brunswick); five between 50,000 and 20,000 (Rostock, Schwerin, Zwickau, Freiberg, Plauen); and twenty-five between 20,000 and 10,000.

Dresden, cap. of the kingdom of Saxony, and the fourth largest city in North Germany, is renowned for its fine edifices, gallery of paintings, magnificent bridge across the Elbe (1424 ft. long), and extensive manufactures, especially of china and porcelain ware, of great beauty. **Meissen**: here is manufactured the famous Dresden china. **Bautzen**, where Napoleon I. defeated the Russians and Prussians in 1813. **Leipzig**, the great emporium of the German book trade, is one of the most important commercial towns in Germany, the seat of three great annual fairs, attended by merchants from all parts of Europe and Western Asia, and the seat of a celebrated university. **Plauen** has extensive linen and cotton manufactures. **Freiberg**, chief town of the mining district of Saxony, has a museum of geology, containing 100,000 specimens, bequeathed by Werner. **Chemnitz**, celebrated for its cotton hosiery, is the most important manufacturing town in Saxony. **Schwerin**, the residence of the Grand Duke of M. Schwerin, is an ancient town on the W. side of the lake of same name. **Rostock**, a seaport town with a small university. **Oldenburg**, cap. of grand duchy of same name, is well fortified, river-port, with 12,000 inhabitants. **Brunswick**, cap. of duchy of same name, a populous city, largely engaged in the woollen trade: here the spinning-wheel was invented. George I., Elector of Hanover, and Duke of Brunswick, became King of Great Britain in 1714. **Weimar**, cap. of grand duchy, is a small town on the Ilm, noted for having been the residence of Göthe, Schiller, Herder, Wieland, and other men of genius. **Eisenach**: near it the castle of Wartburg, the Patmos of Luther in 1522. **Neu-Strelitz**, cap. of grand duchy, contains a collection of curious antiquities. **Dessau**, a neat little town, near the confluence of the Mulde and Elbe, contains a college and a normal school. **Meiningen**, cap. of duchy, a small town, with a fine collection of paintings. **Gotha**, a beautiful town on the Leine, and cap. of duchy, with manufactures of cotton, woollen, and porcelain, a picture-gallery, and a library of 120,000 vols. Since 1764, the 'Almanach de Gotha' has been published here. **Coburg**; near it Rosenau, the birthplace of the late lamented Prince Albert. **Altenburg**, cap. of duchy, is a thriving town with manufactures of ribbons and woollen cloths. **Detmold**, cap. of principality, is a small town on the Werra, of no special interest. **Hamburg**, a celebrated free city on the estuary of the Elbe, with 225,000 inhabitants: it is said to have been founded about A.D. 809 by Charlemagne; it is the most important commercial city on the continent, and the great entrepôt for British and American goods to Germany: its mercantile navy consists of about 500 vessels, carrying 240,000 tons; the imports in 1867 amounted to £68,000,000. **Lubeck**, also a free city, has great fairs, and a very extensive commerce with Denmark, Sweden, and Russia: here are kept the records of the Hanseatic League, so famous in the middle ages. **Bremen**, a free city on the Weser, and second only to Hamburg as a seat of German commerce, is

the great port for emigration to America; in 1867 the exports and imports amounted to about £15,000,000 each.

Capes and Islands.—Bruster Head and Rixhöft Point, guarding the G. of Danzig; C. Dars, N.W. of Pomerania; Ritzebüttel Head, in Hanover. ISLANDS.—Usedom and Wollin, at the mouth of the Oder; Rügen, N.W. of Pomerania; Fehmern and Alsen, E. of Schleswig-Holstein; Sylt, Föhr, and Römö, W. of Schleswig; and a small archipelago between the mouths of the Weser and Ems.

Gulfs, Bays, and Straits.—Curische Haff, at the mouth of the Niemen; Frische Haff and G. of Dantzic, at the mouth of the Vistula; Swinemünde Bay and Stettiner Haff, N. of Pomerania; West Deep and Str. of Gellen, between Rugen and the mainland; G. of Lübeck, at the mouth of the Trave; Fehmern Sd. and Kiel Fd., N.E. of Holstein; Flensborg Fd. and G. of Apenrade, E. of Schleswig; Estuaries of the Elbe, Weser, Jahde, and Ems.

Surface and Mountains.—The surface of the countries recently forming the North German Confederation is, generally speaking, extremely level, Prussia and the Northern States being situated in the great northern plain of Central and Eastern Europe; but the southern members of the confederation are bounded, or traversed, by various chains of hills, as the *Sudetic* range and the *Riesengebirge*, between Prussia and Bohemia; the *Thüringerwald* in the Sachsen States; the *Odenwald* in Hesse Darmstadt; the *Westerwald* in Nassau; the *Eifel* in Rhenish Prussia; and the *Harz* in Brunswick and Hanover, for which see under "South Germany."

River-Basins.—Beginning at the N.E. angle of Prussia, the principal river-basins of North Germany are the Niemen or Memel, with an area of 35,700 English sq. miles; the Vistula, 72,300 sq. miles; the Oder, 45,200 sq. miles; the Elbe, 55,000 sq. miles; the Weser, 17,700 sq. miles; and the Rhine, 75,000 sq. miles. Of these the first three fall into the Baltic, and the others into the North Sea. An extended table of the rivers and towns for the whole of Germany will be found under "Austria."

Lakes.—The lakes of North Germany are exceedingly numerous, but are all very small, the principal being the Spirden See and Maner See, in Prussia Proper, the former being drained by an affluent of the Pregel, and the latter by the Pissek, a sub-affluent of the Vistula; Plau, Malchow, Flesen, Kölpin, and Müritz, in Mecklenburg, all drained by the Elde, a tributary of the Elbe; Dümer, in Hanover, drained by the Hunte, an affluent of the Weser.

Climate.—Prussia and the other States of North Germany being all situated in the great northern plain, and therefore exposed to the winds blowing from the Baltic, the North Sea, and the Arctic Ocean, the winter is long and severe, the lakes and rivers being covered with thick ice—sufficient to bear loaded waggons—and the ground with deep snow, for three or four months in the year; but the summer is usually warm, humid, and variable, and in Rhenish Prussia the vine is successfully cultivated. The mean annual tem-

perature of Berlin, which is one degree farther north than London, is 48°.3, or three degrees lower than in London; the mean summer at Berlin is nearly the same as in the British metropolis (64°.2), but the mean winter is more than 3½ degrees lower. The annual rainfall at Berlin is about 22½ inches, decreasing towards the east; number of rainy days 152; prevailing winds W. and S.W.

Geology and Minerals.—The Rhenish provinces of Prussia consist, for the most part, of upper palæozoic beds, but nearly all the rest of Northern Germany is covered with tertiary strata. Minerals are very abundant, especially in the Erzgebirge and Harz Mountains; the former containing the metals in great variety, besides numerous precious stones, and the latter, mines of gold, silver, iron, copper, lead, salt, coal, alum, and sulphur. Valuable mines of coal and zinc are wrought in Silesia; coal, iron, lead, copper, and mineral springs abound in the Rhenish provinces; while recently have been discovered inexhaustible deposits of pure rock-salt in Pomerania, near Stettin, whence it can be shipped at a very low price. The most characteristic mineral of Prussia proper is amber, a fossil resin, which occurs in beds of lignite on the Baltic coast, and which is exported to Turkey and other places, to be manufactured into mouthpieces for meerschaum pipes. Prussia has upwards of 100 mineral springs of various properties and virtues, the most noted of which are those of Aix-la-Chapelle, Wiesbaden, Ems, Selters, and Homburg.

Botany and Agriculture.—The whole of Germany is embraced in Professor Schouw's second "phyto-geographic region," the characteristics of which are mentioned under "Europe." The indigenous plants are reckoned at about 7000 species, of which 2566 are flowering, including 2037 dicotyledons and 529 monocotyledons. Forests and heaths are numerous, and the most frequent forest-trees are the elm, poplar, oak, birch, and pine. Fruit-trees form of late years an important article of husbandry, and the vine, chestnut, and almond thrive well in the valley of the Rhine; while the apple, pear, walnut, and apricot abound everywhere. Of all wine-producing countries, no vineyards are cultivated with such care as those of Rhenish Prussia, Nassau, and Rhenish Bavaria. There is a universal interest taken in the growth of the vines, and a universal pleasure in their progress. The district which produces the best Rhenish wine is the Rheingau, a chain of hills in Nassau, extending along the right bank of the Rhine for about 25 miles. The wines of Germany are popularly known in this country under the general name of *Hock*, but there are numerous varieties, the chief feature of all being their delicate flavour and extraordinary durability. Within the last ten years the importation of Rhenish wine into this country has nearly doubled itself. Rye is the favourite grain, and forms, with potatoes, the principal food of the people; but wheat, barley, oats, flax, hemp, and tobacco are extensively cultivated. Chicory and beetroot (for the manufacture of sugar) are cultivated largely in Saxony. The soil is, generally speaking, fertile, and the various operations of agriculture are carefully conducted. About three-fourths of the

population are engaged on the soil, and more corn is raised than is required for home consumption. Pasturage is generally excellent; sheep, cattle, and horses are extensively reared; and wool forms an important article of exportation. The merino breed of sheep has been introduced into Saxony with great success.

Zoology.—The number of species of Mammalia in the whole of Germany is estimated at 78, of which 46 are carnivora, 22 rodents, 1 pachyderm, and 9 ruminants. The forests abound with wild animals, the most common of which are the hog, deer, wolf, fox, lynx, marten, and weasel. The birds amount to 305 species, the reptiles to 31, and fishes are numerous, both marine and fresh-water. Of the former, the salmon, sturgeon, turbot, and flounder are the most common; and of the latter, the carp, pike, perch, eel, and trout. The Fishes, Molluscs, Radiata, and most of the Articulata, belong to the Celtic province of marine life, which includes the Baltic and North Sea. Among domestic animals may be mentioned horses, cattle, and sheep, all of improved breeds; asses, mules, goats, and swine in immense numbers; while the silkworm has recently made great progress in many of the states.

Ethnography.—The people of North Germany belong, for the most part, to the Teutonic stock, but the Sclavonians predominate in Posen, Prussia Proper, and a part of Upper Silesia, and there is a mixture of Sclavonic blood in Mecklenburg, Saxony, and the portion of Bavaria south of the Danube; while Celtic blood has mingled with the Teutonic in Würtemberg, Baden, and parts of Bavaria.

Language.—The German language, in one or other of its dialects, is almost the only tongue spoken in Northern and Southern Germany. It branches off into two grand divisions—the *Hoch Deutsch* or High German, distinguished by its rough and guttural sounds; and the *Nieder Deutsch* or Low German, characterised by a softer enunciation. The former prevails in Southern and Central Germany—viz., Baden, Würtemberg, Bavaria, Nassau, the Saxon and Hessen States; and the latter in Prussian Germany, Oldenburg, and Mecklenburg. High German alone has been cultivated since the time of Luther, whose mother tongue it was, and who made it the vehicle of spreading the principles of the Reformation. In all parts of Germany it is the medium of intercourse between the educated classes; it is also the language of religion, legislation, and literature. Various Sclavonic tongues are also spoken, as the Polish in Posen, the Slowakish in Upper Silesia, and the Wendish in the centre of Pomerania. The Old Prussian once spoken by the *Pruseri* in Prussia Proper—a Sclavonian tongue allied to the Lithuanian—is now extinct.

Religion.—Throughout the various states of Northern Germany the great majority of the inhabitants are Protestant, there being in 1867, in the 21 states, 21,314,000 Protestants and 8,131,000 Roman Catholics, together with 350,000 Jews, who principally reside in Posen. In Prussia alone the Protestants number 15,672,000, and the Roman Catholics 7,955,000. The Protestants are divided into Lutherans and Calvinists, the former of which are greatly the more numerous; but Lutheranism has lost all its original earnestness, and now occupies a sort of middle position between Calvinism and Catholicism: for example, it retains private confession, bestows on the penitent full absolution from guilt,

and Luther's cardinal doctrine of "justification by faith alone" has now come to signify justification by *faith in the sacraments*. Properly speaking, there is no Established Church, and one religion is not upheld by the State in preference to another; all denominations enjoy the same privileges, all citizens are equally eligible to places of trust and emolument, and both the Roman Catholic and Protestant clergy are paid by Government.

Education.—Both primary and advanced education is in a highly flourishing condition throughout the whole of North Germany, unless we except Oldenburg and the two Mecklenburgs, where primary education is deficient. In all the other states, especially in Prussia and Saxony, the people are better educated than in any other country in Europe. Generally speaking, one-sixth of the population are constantly at school, attendance at which is compulsory between the ages of six and fourteen years. In Prussia, where education absorbs 2½ per cent of the public revenue, all schools, whether public or private, are under the control of the Minister of Public Instruction. School-fees are exceedingly moderate, the children of the poor are instructed at the public expense, and it is rare to meet with any one who cannot read and write. In addition to the primary schools, there are numerous gymnasia, lyceums, academies, universities, learned societies, and richly-furnished libraries. The proficiency of the pupils when quitting the gymnasium is generally higher than that of Scottish and English students when leaving the university; while in the university it is beyond comparison superior to anything we have in this country. In Prussia alone there are now nine universities—viz., those of Berlin, Halle, Bonn, Breslau, Greifswald, Königsberg, Kiel, Göttingen, and Marburg—the first three of which are the most famous, while the last three are situated in the states recently incorporated. There are only four universities in the other twenty states —viz., Leipzig in Saxony, Rostock in Mecklenburg-Schwerin, Giessen in Hesse-Darmstadt, and Jena in Saxe-Weimar.

Literature.—With the exception, perhaps, of the British Isles, no other portion of Europe, of equal size, can boast of such a galaxy of illustrious names in every department of literature, science, and art. In the following list we do not distinguish the natives of North and South Germany from those of the Germanic portions of Prussia and Austria:—

POETRY: Ofterdingen (the probable collector of the poems forming the "Niebelungen Lied," the Iliad of the Germans), Hutten, Opitz, Gellert, Klopstock, Burger, Wieland, Herder, Göthe, Schiller, Uhland, Körner, Voss. HISTORY: Pfeffel, Hüllmann, Bahr, Rotteck, Gœrres, Becker, Schlözer, Leo, Heeren, Wachler, Gervinus, Raumer, Wachsmuth, Klemm, Gülich, Menzel, Ranke. PHYSICAL SCIENCE: Albertus Magnus, Copernicus, Kepler, Cluverius, Blumenbach, Olbers, Encke, W. Herschel, Tennemann, Ritter, Berghaus, Leopold von Buch, Alexander von Humboldt, Liebig, Rammelsberg, Bischoff, Naumann, Mohs, G. Rose, Haidinger, Meckel, Mitscherlich. MENTAL PHILOSOPHY and JURISPRUDENCE: Leibnitz, C. Wolf, Brucker, Kant, Jacobi, Fichte, Schelling, Hegel, Puffendorf. SACRED LITERATURE: Ulphilas (translator of the Gothic version of the Gospels), Tauler, Luther, Melancthon, Spalatin, Böhme, Arndt, Spener, Franke, Sturm, Zinzendorf, Mosheim, Bengel, Michælis, Semler, Rosenmüller, Eichhorn, Griesbach, Knapp, Hug, De Wette, Schrœch, Schleiermacher, Guericke, Hase, Neander, Gieseler, Plank,

Hengstenberg, Tholuck, Tischendorf, Stier, H. Olshausen, Ullmann, Krummacher, Lange. PHILOLOGY: Reuchlin, Buxtorf, Stockius, Ludolf, Fabricius, F. A. Wolf, Adelung, Schleusner, Schneider, Vossius, Freytag, Wahl, Gesenius, Bopp, Grimm, Reiske, Ernesti, Heyne, Buttmann, Matthiæ, Zumpt, Freund, Ewald, Passow, Rödiger, Fürst, Rosegarten. FINE ARTS: In Music some of the more celebrated names are—Handel, Bach, Haydn, Beethoven, Weber, Mozart, Klein, Mendelssohn, Spohr; in Painting—Albert Durer, Elzheimer, Sandrart, Van-der-Faes, Roos, Warner, G. Netscher, Mignon, Kneller, Anna Waser, Denner; and in Sculpture—Dannecker. MISCELLANEOUS: Werner, Kotzebue, Jung Stilling, Zimmermann, Herder, Lessing, Bouterweck, Tieck, Jean Paul Richter, Wagner, A. W. Schlegel, Bunsen, Richard Lepsius.

Government.—The government of Prussia is a hereditary constitutional monarchy, the executive being invested in the king and two chambers—an Upper House, or House of Lords, and a Chamber of deputies, elected by the people, and consisting of 432 members. Every Prussian subject who has attained his 25th year is entitled to vote. The reigning sovereign is William I., brother of the late Frederick William IV., who died in 1861. The minor States, with the exception of the free cities (Hamburg, Bremen, and Lübeck), have a monarchical form of government, generally with two chambers, one of which is elected by the citizens. All the states of the Confederation are represented in their corporate capacity by a parliament which sits at Berlin under the presidency of the Emperor of Germany. It consists of two bodies—a Federal Council of 43 members (17 of whom represent Prussia), and a House of Representatives, elected by universal suffrage, at the rate of one member for every 100,000 inhabitants. *Army and Navy.*—The army of the entire Confederation, and which is under the exclusive control of Prussia, consisted, in 1869, of 546,505 men (on the war footing), with a reserve of 214,700, and garrison troops, 270,000—forming a total of 1,021,000. But in time of peace the army amounts to 311,985. The navy consists of 87 vessels, with 547 guns, and 8870 horse-power. The total *Receipts* of the various States amounted, in 1868, to £25,380,472; the *Expenditure* to about an equal sum, and the Public Debt to £62,120,000. The revenue of Prussia, for 1873, is estimated at £30,661,000.

Commerce, Manufactures, Exports, and Imports.—Until the formation of the Zollverein or Customs' League in 1818, trade was greatly trammelled by each petty State in Germany exacting dues from every vessel that touched its frontiers. Since then, however, only one charge has been levied, and the proceeds divided among the different states forming the League, in the ratio of their respective populations. The late war brought the Zollverein to an end, but in 1867 a new treaty, on an enlarged basis, was concluded, embracing all the States of both North and South Germany, with the exception of Hamburg, Bremen, Lübeck, and Altona, which for the present are ports of free importation. In 1868 the gross receipts of the Zollverein amounted to 27,319,525 thalers, or £4,097,928. Of this sum 19,900,000 thalers were received by Prussia, 2,655,000 by Saxony, 1,407,000 by Bavaria, 575,000 by Würtemberg, and 1,165,000 by

Baden. The mercantile marine of Prussia has been largely increased by the acquisition of Hanover and Schleswig-Holstein, and in 1873 numbered 5896 vessels, carrying about 2,480,000 tons. The principal exports from Prussia and North Germany are corn, timber, wines, horses, horned cattle, coals, wool, oil, flax, hops, tobacco, mineral waters, and distilled liquors, together with woollen and linen manufactured goods. Among the articles exported from Prussia to Great Britain are, corn to the value of about £5,000,000 annually, and timber, £1,000,000; while she sends coal in vast quantities to other parts of Germany, France, and Switzerland. In 1873 the production of coal in Prussia amounted to 38,000,000 tons. The chief articles imported into Prussia and North Germany from Great Britain are iron, wrought and unwrought, herrings, and cotton-yarn, amounting, in 1867, to £2,886,000, and colonial produce, raw cotton, and silks. The exports from Danzig and Stettin in 1866 amounted to £5,268,000, and the imports to £7,973,000. The manufactures are numerous and important, but chiefly for home consumption. Those of Prussia consist for the most part of textile fabrics, machinery, beet-root sugar, porcelain, earthenware, paper, leather, musical instruments. Cotton is manufactured extensively at Elberfeld and Barmen, linen at Bielefeld and Liegnitz, cutlery and arms at Solingen, silks and velvets at Crefeld, woollen stuffs at Potsdam, while Berlin is the great seat of the manufacture of artistic articles, such as "Berlin ware," jewellery, toys, and musical and philosophical instruments. Brewing and distilling are extensively carried on in all parts of the kingdom. In the other states of the Confederation the principal manufactures are cotton and woollen goods, and "Dresden china" in Saxony and Brunswick; beer, leather, paper, wooden and straw ware, linen, &c., in the smaller States.

Inland Communication.—Internal communication, both by land and water, is in a highly efficient state, consisting of many navigable rivers connected by canals, excellent roads, and a perfect network of railways. At the beginning of 1867 there were in Prussia 5794 miles of railroad open for traffic, and in the other States of North Germany 1092 miles—making a total of 6886 miles, while in the end of 1873 the number of miles in the whole Confederation amounted to 12,700 miles. Berlin is connected by rail with all the more important towns in Prussia, and with the capitals of all the other States of the Confederation; while other important lines, following the courses of the Rhine, Elbe, and Oder, serve to connect Northern and Southern Germany.

III. South Germany.

Position and Boundaries.—N.E., Saxony; N.W., the Maine, separating it from Prussia; W., France, from which it is separated for the most part by the Rhine; S., Switzerland and the

Tyrol; E., Upper Austria and Bohemia. Lat. 47° 20′—50° 41′ N.; lon. 7° 5′—13° 48′ E.

Carlsruhe, cap. of Baden, and on the central parallel of 49°, has the same latitude as Paris, Regensburg, Lemberg, Poltava, New Westminster in British Columbia, and the southern boundary of British North America: and has the same longitude as Christiansand, Oldenburg, Lucerne, Milan, Cagliari, and Old Calabar. The general outline is rectangular, nearly square; its greatest length, which is from E. to W., is about 250 miles; while its extreme breadth, from N. to S., does not exceed 220. South Germany nowhere approaches the sea, but the Rhine, which is navigable for steamers up to Basle and for small craft to Chur, forms a large portion of the southern and western boundary; while its tributary, the Maine, which bounds it on the N.W., is navigable as far up as Bamberg.

Area and Population.—The united area of the five states composing South Germany is 50,249 sq. miles, or about half the size of Great Britain; while the aggregate population, 1872, amounted to 10,593,876, being about two-fifths the population of the latter. South Germany is very densely peopled, having 210 persons to each sq. m. The names, area, and population of the different states are as follows:—

	Sq. m.	Pop. 1872
Kingdom of Bavaria, ...	29,342	4,864,402
Kingdom of Würtemberg, . . .	7,533	1,818,484
Grand Duchy of Baden, ...	5,912	1,461,428
Grand Duchy of Hesse-Darmstadt, . .	2,962	852,343
Elsass-Lothringen, ...	4,500	1,597,219
Total, . .	50,249	10,593,876

Political Divisions.—South Germany consists of five distinct states, each of which is a member of the newly-constituted German Empire. Their independence is so far sacrificed that, in the event of war with a foreign state, Prussia is entitled to claim the command of their armies.

Bavaria.—MUNICH 171, Landshut 12 (Isar), Passau 13, Straubing 11, Ratisbon or Regensburg 30, Ingolstadt 17 (Danube), Amberg 12 (Vils), Kempten 11 (Iller), Augsburg 50 (Lech), Spires or Speyer 15, Germersheim 10 (Rhine), Kaiserslautern 15 (Lauter), Aschaffenburg 10, Würzburg 42 (Maine), Landau 11 (Queich), Bamberg 26, Erlangen 12, Fürth 22, Schwabach 10 (Regnitz), Nüremberg 83 (Pegnitz), Anspach 13 (Rezat), Baireuth 19 (Red Maine), Hof 14 (Saale).
Freising, Neuburg, Eichstadt, Dinkelsbuhl, Nordlingen, Memmingen, Zweibrücken, Pirmasens, Kissingen, Schweinfürt, Rothenburg, *Hohenlinden*.

Würtemberg.—STUTTGART 84 (Nesenbach), Reutlingen 14 (Eschatz), Ludwigsburg 12, Heilbronn 17, Esslingen 17 (Neckar), Ulm 25 (Danube).
Cannstadt, Kirchheim, Tübingen, Rottenburg, Hall, Gmünd, Göppingen, Ehningen, Tuttlingen.

Baden.—CARLSRUHE 37 n., Mannheim 40 (Rhine), Heidelberg 20 (Neckar), Pforzheim 16 (Ens), Rastadt 11 (Murg), Freiburg 21 (Dreisam).
Constance, Weinheim, Bruchsal, Bretten, Lahr, Baden-Baden.

Hesse-Darmstadt.—DARMSTADT 40 (Darm), Giessen 10 (Lahn), Mayence or Mainz 54, Worms 12 (Rhine), Offenbach 23 (Maine).
Elsass-Lothringen.—See page 198.

Descriptive Notes.—The five States above enumerated contain only one town above 100,000 inhabitants (Munich); three between 100,000 and 50,000 (Nuremberg, Stuttgart, Augsburg); ten between 50,000 and 20,000 (Mayence, Würzburg, Mannheim, Carlsruhe, Darmstadt, Ratisbon, Bamberg, Fürth, Freiburg, Offenbach); and twenty-five between 20,000 and 10,000.

Munich (*Ger.* München), cap. of Bavaria, in the midst of a sterile plain, is, with the exception of Madrid, the loftiest city in Europe, having an elevation of 1690 feet: for the most part it is of modern erection, is by far the most populous city in South Germany, and, in regard to its treasures in painting and sculpture, is unrivalled in Germany. It has been embellished and extended during the last century on a scale unknown in any other European city, except Paris: it contains numerous splendid edifices in every known style of architecture, among which are the university, the palace, and the picture-gallery. Near it is **Hohenlinden**, where, in 1800, the French totally defeated the Austrians. **Passau** is strongly fortified, and forms the defence of Bavaria against Austria. **Ratisbon**, long the cap. of Bavaria, and, from 1663 to 1808, the permanent seat of the Imperial Diet: here lie the remains of Kepler, and here Napoleon was wounded in battle in 1809. **Augsburg**, an important city, the principal arsenal of the kingdom, and the great emporium for German, Italian, and Greek wines; in regard to banking and exchange operations, it is second only to Frankfürt; but it is chiefly celebrated for the Confession of Faith which the Protestants presented here to Charles V. in 1530. **Spires**, noted as the place where the Reformers, in 1529, presented their famous protest to the Emperor, which originated the religious designation of Protestants. **Würsburg**, a university town, was formerly the cap. of Franconia. **Bamberg** is extensively engaged in raising and preparing liquorice and medicinal plants. **Erlangen** contains the only Protestant university in Bavaria. **Fürth**, next to Nuremberg, the most important manufacturing town in the kingdom, the staple commodities being toys and fancy articles. **Nüremberg**, the great toy-mart of Germany, is famous for its numerous inventions in the mechanical arts, as the watch, gun-carriages, copperplate-engraving, musket, clarion, &c. **Stuttgart**, the most beautifully-situated capital in Germany, is of very recent origin; contains the royal palace, adorned by Flemish paintings and sculptures by Dannecker and Canova, and the royal library of 360,000 volumes, including a unique collection of 9000 bibles, printed in 80 different languages. **Ulm**, a fortified town on the Danube, where it begins to be navigable, contains one of the finest Gothic cathedrals in Germany: here the Austrian General, Mack, capitulated to Napoleon in 1805. **Carlsruhe** ("Charles's rest"), the cap. of Baden, in the valley of the Rhine, is an elegant city, with its 32 streets diverging from the palace like the rays of a fan: has manufactures of jewellery, carpets, and chemical products. **Mannheim**, at the confluence of the Rhine and Neckar, is well situated for commerce, and is the most populous city in Baden. **Heidelberg**, famous for its romantic scenery, its flourishing university, and an ancient castle, long the residence of the Electors-Palatine. **Pforzheim**, noted as being the birthplace of Reuchlin. **Rastadt**, a federal fortress of the late Germanic Confederation, is celebrated for the treaty of

1714 between Villars and Eugene, the battle of 1796 between the French and Austrians, and the congress of 1799. **Freiburg**, noted for its magnificent Gothic cathedral, with a pyramidal spire 380 feet high: contains a Roman Catholic university, which is well attended. **Constance**, the seat of a famous council in 1414, which sentenced John Huss and Jerome of Prague to the flames. **Bretten**, the b.p. of Melancthon, in 1497. **Baden-Baden**, with hot saline springs, is a celebrated watering-place. **Darmstadt**, cap. of the grand duchy, is a handsome town, with a magnificent ducal library. **Giessen**, the seat of a famous university, rendered illustrious by Baron Liebig's discoveries in organic chemistry. **Mayence** (*Ger.* Mainz), the most populous town in the grand duchy, and one of the strongest fortresses in Europe, forms the great bulwark of Germany against France: it is the b.p. of Guttemberg, the inventor of printing (1440). **Offenbach**, the chief industrial town in the state, is noted for its bookbinding and manufacture of carriages. **Worms**, famous for the Diet of 1521, where Luther was outlawed.

Surface and Mountains. — The surface is hilly, and frequently mountainous. A branch of the Rhætian Alps from Austria forms the southern boundary of Bavaria and Würtemberg, separating the Inn from the Isar, and the basin of the Rhine from that of the Danube, but nowhere attaining the limit of perennial snow, which in the Alps has an elevation of 8900 feet. Proceeding northwards, the different ranges are as follows:—

The *Schwartzwald*, or "Black Forest," in Baden, separates the Rhine from the Neckar; maximum elevation, 4675 feet.

The *Rauhe Alp*, or Swabian Alps, in Würtemberg, between the Danube and Neckar, 3300 feet.

The *Böhmerwald*, between Bavaria and Bohemia, separates the Danube from the Moldau, an affluent of the Elbe, 4613 feet.

The *Erzgebirge*, between Saxony and Bohemia, separates the basins of the Elbe and Danube, 2500 feet.

The *Fichtelgebirge*, in the N.E. of Bavaria, separates the affluents of the Danube from the rivers that find their way northward, 3481 feet.

The *Thüringerwald*, in the Sachsen States, and between the sources of the Werra and Saale, 3286 feet

The *Rhöngebirge*, in the N.W. of Bavaria, separates the Fulda and Werra from the Kinzig and Maine, 2300 feet.

The *Odenwald*, in Hesse Darmstadt, forms a continuation of the Schwartzwald, and separates the Maine from the Neckar, 2300 feet.

The *Westerwald*, in Nassau, between the Sieg and Lahn, 2850 feet.

The *Eifel*, in Rhenish Prussia, between the Moselle and Ahr, 2200 feet.

The *Harzgebirge*, or Harz Mountains, in Brunswick, and the S. of Hanover, between the Weser and the Elbe, 3230 feet.

River-Basins.—For the river-basins see under "North Germany," and for the table of rivers and towns see under "Austria."

Lakes.—*Boden See* or *Lake of Constance*, bet. South Germany and Switzerland, traversed by the Rhine, of which it forms the great reservoir; length 42 m., breadth 8 m., elevation 1255 feet, depth 964 feet; the shores are generally flat, but the snow-clad Alps in the distance have an imposing effect; its waters are subject to a sudden rise and fall, without apparent cause. Other lakes are *Ammer See*,

Würm See, and *Chiem See* in the S. of Bavaria, drained by affluents of the Isar and Inn, tributaries of the Danube.

Climate.—In all parts of Germany the mean annual temperature is nearly the same, the greater elevation of Southern Germany compensating for its lower latitude. Here the sky is more serene and the climate much drier than in North Germany. The mean annual temp. of Carlsruhe, in the central parallel, is 51°.5—winter, 34°.6; summer, 66°.3. At Ulm, on the Danube, the annual fall of rain is 28 inches, and in N. Germany 22½ inches, but it varies greatly in different parts. Except in the valley of the Rhine, the climate is generally very cold, and the mountains rarely free from snow.

Geology and Minerals.—The region south of the Danube is occupied with tertiary strata; the large district lying between the Rhine, Maine, Naab, and Danube is covered with secondary rocks; the palæozoic series rarely appears, while E. of the Naab, granitic rocks prevail, especially in the Böhmerwald.

The principal mineral products of the various states of South Germany are—*Bavaria:* salt (formerly a Government monopoly), obtained from the rock and by evaporation; iron and coal, found in many places; copper, manganese, quicksilver, and cobalt, in Rhenish Bavaria. *Würtemberg:* salt, iron, and coal are abundant, while silver, copper, lead, bismuth, and malachite are found in small quantities. The mineral products of *Baden* are chiefly alum, sulphur, silver, iron, copper, lead, and coal; gold-washing, formerly general along the Rhine, is now insignificant. Iron, coal, and salt abound in *Hesse-Darmstadt.* The principal mineral springs are those of Kissingen, Brückenau, and Rosenheim, in Bavaria; Wildbad, in Würtemberg; Baden-Baden, in the Grand Duchy of Baden.

Botany and Agriculture.—For the number of species of plants in Germany, as also for a description of the culture and exportation of the German wines, we refer the student to the corresponding article under "Prussia and North Germany."

In South Germany, about three-fifths of the entire area is under cultivation, and the soil is generally very fertile. Nearly all the cereals are grown on the lower grounds, and considerable quantities of corn are exported from the various states. The vine is extensively cultivated in the valleys of the Rhine and Maine, and to a smaller extent in the plain of the Danube, and on the shores of Lake Constance. Baden alone produces annually about 14,000,000 gals. of excellent wine, Würtemberg nearly 5,000,000 gals., while Rhenish Bavaria has been long celebrated for its Stein and Leisten wines. Hops and the tobacco-plant are very largely grown, and Bavaria exports large quantities of beer, nearly 100,000,000 gals. being annually produced. About one-third of South Germany is covered with forests, chiefly pine and fir trees. The Schwarzwald ("Black Forest"), in Baden, is especially celebrated for its immense forest of gigantic trees, some of them attaining the height of 180 feet.

Zoology.—The fauna of all Germany has been noticed above. In regard to tame animals, cattle-rearing is the exclusive industry of the Alps and other mountainous districts, while horses, sheep, and goats are extensively raised in all the southern states. The silkworm has been recently introduced into Bavaria, and the rearing of bees forms

an important occupation in Baden. The other domestic animals are the same as in England.

Ethnography.—The people and language are the same as in North Germany (which see).

Religion and Education.—Of the 8,567,000 inhabitants of the southern states, 4,672,000 are Roman Catholics, being 54 per cent of the whole population; while 3,818,000 are Protestants, being 44 per cent of the whole. Bavaria and Baden may be styled Catholic countries, the Catholics being to the Protestants as 2 to 1 in the former state, and 3 to 1 in the latter. Protestants, however, greatly outnumber the Roman Catholics in Würtemberg and Hesse-Darmstadt, being in the former as 2 to 1, and in the latter as 3 to 1. The number of Jews in the five states is estimated at 105,000. In Bavaria, the Roman Catholic Church is richly endowed, possessing property amounting to above £8,500,000, besides which the State pays £130,000 annually to the clergy. Protestants, however, enjoy complete religious liberty, and are eligible to all civil and military appointments. In Baden, the Roman Catholic Church is under the supreme management of an archbishop appointed by the Pope, and is quite independent of the Government. Frequent disputes between the Church and the state have been the result. In Würtemberg, the supreme direction of the Protestant Church is vested in the King, and Protestantism is virtually, though not formally, the religion of the state. Education is in a very advanced state throughout South Germany, especially in Würtemberg, where it is rare to find any one who cannot read and write. Attendance at school is compulsory in all the states; every village, and even hamlet, has its primary school, and in Würtemberg a full sixth of the population is under tuition. There are 7 universities—viz., those of Munich, Würzburg, and Erlangen, in Bavaria; Tübingen, in Würtemberg; Heidelberg and Freiburg, in Baden; and Giessen, in Hesse-Darmstadt.

Government.—In all the states the form of government is monarchical, but the title of King is confined to the sovereigns of Bavaria and Würtemberg. Representative institutions are common to all the states, the executive power resting in the sovereign, the legislative in a parliament consisting of two houses, and all functionaries being responsible. The total armed force amounts, in time of war, to 142,895 men, or to 90,421 in time of peace. Of the latter, 49,949 belong to Bavaria, 14,150 to Würtemberg, 14,812 to Baden, and 11,510 to Hesse-Darmstadt. By virtue of special treaties between Prussia and each of the states of South Germany, the former, in time of war, is virtually placed in command of their armies, while, as a matter of course, none of them possesses a navy. The aggregate revenue and expenditure of these states, in 1866, amounted to £7,684,304, about one-half of which pertained to Bavaria, while the aggregate public debt amounted to £45,324,167.

Commerce, Manufactures, and Inland Communication.—These states, being wholly inland, cannot vie with their neighbours in regard to the extent of their commerce. Still the transit trade between Italy, Switzerland, Austria, and North Germany, carried on mainly by steamers on the Rhine, Maine, Neckar, and even the Danube (below Ulm), is very considerable. The Danube also communicates by the Ludwig's canal with the Maine and Rhine, and thus materially facilitates internal communication. Manufacturing

industry is highly developed, except in Bavaria, where wine-making and the brewing of beer are the principal products. Coarse linens, cotton, woollen, and silk stuffs are largely manufactured, together with tobacco, leather, iron and steel goods, machinery, paper, cabinet-work, papier-maché, porcelain, jewellery, toys, so-called Dutch clocks, and mathematical and optical instruments, which are held in high repute. Bookbinding and the construction of carriages are largely carried on in Hesse-Darmstadt. The exports consist chiefly of wine, timber, corn, salt, beer, leather, tobacco, cattle, glass, jewellery, oils, and drugs; and the imports, of sugar, coffee, silk, wool, hemp, and flax. Railway communication has made great progress: in 1869 the total number of miles in operation was 2977, together with 4362 miles of telegraph wires.

AUSTRO-HUNGARIAN EMPIRE.

Boundaries. — N., Poland, Silesia, and the kingdom of Saxony; W., Bavaria, Switzerland, and Lombardy; S., Venetia, the Adriatic, and Turkey; E., Moldavia and Russia.

Omitting Dalmatia and the southern portion of Croatia, which extend southward along the eastern shore of the Adriatic to nearly the 42d parallel, the remainder of the empire lies between lat. 45° and 51° N., and between lon. 9° 41′ and 26° 35′ E. Vienna, the capital (lat. 48° 13′, lon. 16° 23′), in the centre of the empire, is nearly on the same parallel as Brest, Munich, Czernowitz, Ekaterinoslav, Ourga, Victoria (Vancouver I.), and St John's (Newfoundland); and on the same meridian as Stockholm, Posen, Cape Spartivento, Lake Tchad, and the mouth of the Orange River. Omitting the Tyrol and Dalmatia, the general form is that of an oblong square, 670 miles long by 420 miles broad, having Buda, the capital of Hungary, in the centre; but the extreme length of the empire, from Lake Constance on the W. to the eastern confines of Transylvania, is about 800 miles, and the extreme breadth, from N. to S., 690 miles. Austria is essentially an inland country, her coast-line, which does not exceed 480 m., being wholly confined to the E. side of the Adriatic. This gives only 1 mile of coast to every 500 sq. m. of surface. With her present boundaries, therefore, Austria can never become a great maritime power.

Area and Population.—By the cession to Italy of Lombardy in 1859, and of Venetia in 1866, the area is now reduced to 240,351 sq. miles, or considerably less than twice the area of the British Isles. With the exception of Russia, however, Austria is still by far the largest state in Europe. By the census of December 1869 the population was 35,904,435, being one-eighth more than that of the United Kingdom, and one million less than the population of France. This allows 108 persons to each sq. mile of surface. About one-fourth of the entire population (9,040,000) are Germans, one-half (16,000,000) Sclavonians, while the remaining fourth is made up of Magyars, Italians, and other races.

Political Divisions.—The Austrian empire, or Austro-Hungarian monarchy as it is now called, is at present divided into eighteen crown-lands or provinces, of which ten are German, two Polish, and six Hungarian.

TEN GERMAN PROVINCES.

Bohemia.*—PRAGUE 190, Budweis 15 (Moldau), Pilsen 14 (Bradawka), Kuttenberg 13 (Elbe), Leipa 10 (Pulnitz), Eger 11 (Eger), Reichenberg 19 (Lower Neisse).
Königgrätz, *Sadowa*, Krumau, Klattau, Leitmeritz, Saatz, Chrudim, Leitomischl, Karlsbad, Töplitz, Marienbad.

Silesia.—TROPPAU 20 (Oppa, *affl.* Oder).
Teschen, Bielitz.

Moravia.—BRÜNN 73 (Schwartza, *sub.-affl.* March), Iglau 17 (Iglawa), Olmütz 14, Sternberg 13 n. (March), Prossnitz 12 (Rumza).
Neutitschein, *Austerlitz*, Nicolsburg, Znaym.

Lower Austria.—VIENNA 834 (Danube), Neustadt 15 (Leitha).
S. Polten, Baden.

Upper Austria.—LINZ 31 (Danube), Steyer 11 (Ens).

Salzburg.—SALZBURG 17 (Salza, *affl.* Inn).

Styria.—GRATZ 87 (Mur, *affl.* Drave).

Illyria (Carinthia and Carniola).—LAYBACH 23 (Laybach), Klagenfurt 14 (Glan).
Idria, Bleibach.

Görz, Trieste, and Istria.—GÖRZ 13 (Isonzo), Trieste 109 (G. of Trieste), Rovigno 11, Pola 11 (W. coast).
Capo d'Istria, Pirano.

Tyrol and Vorarlberg.—INNSBRUCK 23 (Inn), Trent 14 (Adige), Botzen 10 (Eisack).

TWO POLISH PROVINCES.

Galicia.†—LEMBERG 87 (Peltew, *affl.* Bug), Cracow 49 (Vistula), Kolomea 15, Sniatyn 11 (Pruth), Sambor 11 (Dniester), Tarnopol 17 (Sered), Stanislau 13 (Bistrica), Drohobicz 11 (Tiszmanicka), Brody 19 (Styr).
Przemysl, Rzeszow, Bochnia, Brzezany, Wieliczka.

Buckowina.—CZERNOWITZ 34 (Pruth).

SIX HUNGARIAN PROVINCES.

Hungary Proper.‡—BUDA or OFEN 55, Pesth 202, Mohacs 11, Fünf-Kir-

* For the pronunciation of the German names, see above, p. 238.
† Rules for the pronunciation of Polish names will be found under "German Empire," p. 237.
‡ The following rules will assist the pupil in pronouncing Hungarian proper names:—
ö, *ü* = same characters in German.
g = *g* in go; this consonant is always hard. *gn* = *ng* Eng.
j = *y* in yonder; as Baja (*Bá'ya*).
s = *sh* in shall; as Sajo (*Shá'yo*). *t* before *i* = *ts*, as Croatia (*Croa'tsia*).
cs = *ts* in wits; as in Debreczen (*Debrets'sen*).
cs = *ch* in church; as in Mohacs, Pancsova (*Mo-hatch'*, *Pan'-cho'va.*)
sz = *s* in Eng.; as Szegedin, Veszprim (*Seg'-ed-in'* *Ves-prem'*).
zs = *s* in vision or French *j*; Zsolna, (*Zhol'na*).
gy = *di* in French Dieu; as Magyar, Gyöngyös (*Mod'yar*, *Dyon'dyos*).
ly = *ll* in million = *gl* in Italian; as Vasarhely (*Va-shar-hel'*).

chen, 24 n., Földvar 11, Alt-Ofen 12, Vacz 11, Komorn 11, Pressburg 47 (Danube), Szeged 69, Vasarhely 43 n., Szentes 26, Kecskemet 42, Felegyhaza 19 n., Nagy-Körös 20, Czegled 19, Tokay 6 (Theiss), Mako 25, Arad 32 (Maros), Szarvas 19, Bekes 20, Csaba 28 (Körös), Grosswardein 29 (Sebes Körös), Debreczen 44 n. (Kassa), Kaschau 16 (Hernad), Miskoltz 28 (Sajo), Eperies 10 (Tarcza), Stuhlweissenburg 23 (Sarvitz), Gran 11, Schemnitz 14 n., Kremnitz 5 n. (Gran), Raab 20 (Raab), Vasarhely-Somlo 25, Oedenburg 19 (Raabnitz).

Transylvania.—KLAUSENBURG 25 (Szamos), Maros-Vasarhely 11 (Maros), Kronstadt 27 n. (Aluta), Hermannstadt 19 (Zibin).
Karlsburg, Bistritz, Nagy-Enyed, Szasz-Regen, Thorda.

Banat and Servia.—TEMESWAR 33 n. (Temes), Versetz 21 n. (Karash), Neusatz 16, Zombor 25 n., Baja 19 (Danube), Nagy-Kikinda 15, Zenta 17, Theresienstadt 56 n. (Theiss), Becskerek 18 (Alt-Bega).
Lugos, Apatin, Lippa.

Croatia and Sclavonia.—AGRAM 21 (Sava), Eszek 14, Warasdin 10 (Drava), Fiume 15 (Adriatic).
Posega, Petrinia, Karlstadt, Zengg.

Dalmatia.—ZARA 19, Bencovas 10 n., Sebenico 14, Spalatro 16, Ragusa 21 (W. co.), Imoschi 23 n. (Bistritza), Knin 23 (Kerka), Dernis 18 (Cicola), Sign 26 (Cettina), Castel-Nuovo 8 (G. of Cattaro).

Military Frontier.*—PETERWARDEIN 7, Pancsova 12, Semlin 13, Mitrovicz 5 (Sava).

Descriptive Notes.—There are, in the Austrian empire, three cities of upwards of 100,000 inhabitants (Vienna, Pesth, Prague); seven between 100,000 and 50,000 (Lemberg, Trieste, Grätz, Szegedin, Brünn, Buda, Theresienstadt); twenty-one between 50,000 and 20,000 (Pressburg, Vasarhely, Cracow, Kecskemet, Debreczen, Csaba, Linz, Arad, Kronstadt, Sign, Czernowitz, Szentes, Mako, Imoschi, Knin, Temeswar, Grosswardein, Zombor, Laybach, Klausenburg, Bekes); and fifty-eight between 20,000 and 10,000.

Prague (*Ger.* Prag), an ancient, large, and fortified city, on both sides of the Moldau, is one of the finest in the empire, and of great historic celebrity: it is the chief seat of the Bohemian manufactures, which consist of thread, linen, cotton, iron, woollen, glass, and paper; contains the oldest university in Austria. Prague contains the tomb of Tycho Brahe, and was the scene of the labours of Jerome of Prague and of John Huss, the celebrated martyrs. **Pilsen** is noted for its iron-mines. **Eger**, where Wallenstein and his friends were assassinated in 1634. **Reichenberg**, a busy manufacturing town on the Neisse. **Königgrätz**; near it **Sadowa**, where the Prussians gained their crowning victory over the Austrians, July 3, 1866. **Brünn**, the principal seat of the woollen manu-

ny = *ni* in opinion = *ñ* Spanish = *gn* in French, as Böszörmeny (*Bos-ormingh*).
Each of the last seven combinations is to be regarded as one letter of a simple sound, like *th* and *sh* in English.

* The Military Frontier is a strip of country comprising an area of 18,165 square miles, and extends along the Turkish frontier from the Adriatic eastward to Moldavia. It consists of parts of Croatia, Sclavonia, the Banat, and Transylvania. All landed property in this district belongs exclusively to the Government, but is held by a kind of military fief on condition of military service in peace and war. In time of war it furnishes 50,000 men. This system of government was organised in 1807, as a protection against the Turks.

factures of Austria: near it the castle of **Spielberg**, a strong prison for political offenders; and at a short distance **Austerlitz**, the scene of Napoleon's triumph in 1805. **Iglau** has numerous manufactures, and silver and lead mines in the vicinity. **Olmütz**, a strongly-fortified city, once the capital of Moravia, contains a university, and has important woollen, linen, and cotton manufactures. **Vienna**, the capital of the Archduchy of Austria and of the Austrian empire, is the fourth largest and one of the most elegant cities on the Continent: it is situated on the right bank of the Danube, and near the centre of the empire; contains numerous splendid palaces, several of which are converted into magnificent public libraries, one of which, the Imperial Library (founded in 1440, the year in which printing was invented) contains 320,000 volumes and 16,000 MSS. The university is celebrated as a medical school, and had, in 1868, 150 professors. Vienna is surrounded by noble botanic gardens, containing the richest and rarest plants. It is the chief manufacturing city in the empire; has great commerce on the Danube and by railways, and three great annual fairs. Here sat the celebrated Congress of Vienna (in 1815) which fixed the present limits of the different European states. **Linz**, a fortified city on the Danube, 100 miles above Vienna, occupies an important military position. **Salzburg** is famous for its salt-mines, and for being the birthplace of Mozart, the eminent musical composer **Grätz**, a populous city on the Mur, contains a university; an institution called the Johanneum, containing rich museums of zoology, botany mineralogy, and coins; numerous manufactures of textile and hardwar goods, and the centre of the trade between the capital and Trieste. **Laybach**, capital of Carniola, has an active transit trade between Vienna and Trieste, with manufactures of porcelain, refined sugar, and linen fabrics. **Idria** is celebrated for its valuable quicksilver-mines. **Görz**, on the Isonzo, has manufactures of silk, leather, &c., and a brisk general trade: here died Charles X., the ex-king of France. **Trieste**, a populous city on the Adriatic, and the great seat of the foreign commerce of the empire; it possesses the same importance for Southern Germany as Hamburg for Northern; maintains a large mercantile fleet; and here reside consuls from most commercial nations. **Pola**, the great naval depot of the empire, is a very ancient town. **Innsbruck**, capital of the Tyrol, has a university with 24 professors, and a number of other educational establishments; with manufactures of silk, woollen, and cotton goods, and considerable trade. **Trent** (*Ger.* Trient), on the left bank of the Adige, is chiefly memorable for the Council of ecclesiastics held here, 1545–1563. **Botzen**, the most important commercial town in the Tyrol. **Lemberg** has a university, attended by 1000 students, and numerous other literary establishments; great trade in corn, cattle, and coal; and several manufactures. One-third of the population are Jews, who are also numerous in all parts of Galicia. **Cracow** (*German* Krakau), the ancient capital of Poland, and more recently of a small republic which was annexed to Austria in 1846, is celebrated for its cathedral, which contains the tombs of many Polish kings; it has a university, the library of which is rich in MSS., and near it is a tumulus erected to the memory of the heroic Kosciusko, the William Tell of Poland, who died in Switzerland in 1817. **Sambor**, **Bochnia**, and **Wielicska**, are famous for their magnificent mines of rock-salt, the last named being the most celebrated in the world. It contains a subterranean town, with streets, churches, statues, &c., all cut out of the solid salt rock, the effect of which is very striking; but the most remarkable circumstance is that the mine contains a small lake and rivulet of fresh water. **Drohobicz** has iron-mines, salt-works, and pitch-

wells in the vicinity. **Brody** maintains an extensive trade with Russia, Poland, and Turkey. **Czernowitz**, capital of the new province Buckowina, has manufactures of clocks, hardware, and silver goods. **Buda** and **Pesth**, on opposite sides of the Danube, but connected by a huge suspension-bridge, form together the capital of the ancient kingdom of Hungary, now restored to much of its former independence. Buda (*Ger.* Ofen), derives its name from its hot sulphur-springs. It is an ancient city, was long in possession of the Turks, who were expelled in 1686, and still contains the regalia of Hungary; it carries on an extensive commerce in wine of excellent quality. Pesth contains a university which has 100 professors, and is attended by about 1300 students. **Komorn**, at the confluence of the Danube and Waag, is one of the strongest fortresses in Europe. **Pressburg**, the ancient capital of Hungary, the former seat of the Hungarian Diet, and the place where the Emperors of Austria were crowned kings of Hungary, is a quiet country town, surrounded by rich vineyards. **Szegedin**, a fortified manufacturing town in the centre of the Hungarian plain, is a place of great trade. **Vasarhely**, the seat of several annual fairs. **Kecskemet**, with five great annual fairs for horses and cattle, has a large trade in corn, wine, and fruit. **Tokay**, a small town on the Theiss, is famous for its wine, the most costly in Europe. **Mako** is largely engaged in the manufacture of wine. **Arad**, with the largest cattle-market in Hungary. **Grosswardein**, with hot mineral springs, is strongly fortified. **Debreczin** contains a Calvinistic college, the most important institution of the kind in the empire. **Miskoltz**, a considerable town, with iron-mines, from which is made the best steel in the empire. **Schemnitz** and **Kremnitz**, two celebrated mining towns, where mines of gold, silver, lead, copper, iron, sulphur, and arsenic are wrought. **Raab**, where the French defeated the Austrians in 1809, is a steam-packet station, at the confl. of the Raab and Danube. **Vasarhely-Somlo** is extensively engaged in raising wine and tobacco. **Oedenburg**, near lake Neusiedler, is an extensive mart for the wine grown in its vicinity. **Klausenburg**, the cap. of Transylvania, an important manufacturing town, is the birthplace of Matthias Corvinus, one of the greatest kings of Hungary. **Kronstadt**, the most populous and commercial town in the province. **Hermanstadt**, the residence of the military commander of Transylvania, a Greek bishop's see, and the seat of Roman Catholic and Lutheran gymnasia, has a fine national museum. **Karlsburg**, a small town, with the richest gold-mines in the empire. **Temeswar**, capital of Banat and Servia, is a strongly-fortified town on the Temes; it has manufactures of silk and woollen stuffs, iron-wares, paper, tobacco, and oil, and an extensive trade; it was taken by the Turks, under Solyman II., in 1551, and retaken by Prince Eugene in 1716. **Versetz**, a fortified town near the Karas, engaged in raising wine, silk, and rice. **Neusatz**, one of the steamboat stations on the Danube, is a place of great trade. **Zombor**, with manufactures of silk, and trade in grain and cattle. **Theresienstadt**, the most populous town in the Banat, consists of an aggregation of villages, with manufactures of linen, leather, and tobacco. **Agram**, capital of the united province of Croatia and Sclavonia, a considerable town on the Sava, contains a fine cathedral and several monasteries. **Essek**, a strongly-fortified town on the Drava, with barracks capable of accommodating 30,000 men. **Warasdin**, a fortified town on the same river, with sulphur-baths and extensive vineyards. **Fiume**, a royal free seaport town on the Gulf of Quarnero, and the outlet for the produce of Hungary. **Zara**, a small town on the Adriatic, capital of the kingdom of Dalmatia, the see of an archbishop, and strongly fortified. **Spalatro**,

noted for its Roman antiquities, is the most important seat of commerce in Dalmatia. **Ragusa**, a strongly-fortified seaport town with an active coasting trade, is frequently visited by earthquakes. **Peterwardein**, so called after Peter the Hermit, who here marshalled the first crusade, is a most formidable military position on the south or right bank of the Danube, opposite Neusatz, with which it communicates by a bridge of boats: it was the scene of a great victory over the Turks, in 1716. **Pancsova**, a considerable trading town on the left bank of the Danube, is well fortified.

Capes and Islands.—Salvatore and Punta di Promontore, S. of Istia, are the only capes. ISLANDS.—Two groups in the Adriatic—viz., the Illyrian archipelago in the Gulf of Quarnero, principal, Veglia, Cherso, and Lossini; and the Dalmatian archipelago on the west coast of Dalmatia, principal, Ugliano, Grossa, Brazza, Lesina, Curzola, and Meleda.

Seas, Gulfs, and Straits.—The Adriatic in the S.W., the chief branches of which on the eastern side are—Gulfs of Trieste and Quarnero, S. of Illyria; Morlacca Channel, between Croatia and the Illyrian archipelago; Gulf of Cattaro, S.W. of Dalmatia.

Surface and Mountains.—Austria is a highly-mountainous country, for although it contains several extensive plains, as the Plain of Hungary and the Plain of Lower Austria, it is traversed by three great mountain-systems—viz., the Alps, the Sudetic Mountains, and the Carpathians.

THE ALPS in the S.W., extending from the Swiss frontier to near Vienna, and consisting of several chains, as the *Carnic Alps*, between Venetia and the Tyrol; highest summit, La Marmolata, in S.E. of Tyrol, 11,500 feet, between the basins of the Piave and Drave: the *Rhætian Alps* in Tyrol, between the basins of the Adige and Inn; with Ortler Spitz, the culminating-point of Austria, 12,789 feet, in S.W. of the Tyrol: the *Noric Alps*, extending from the Tyrol to near Vienna, and separating the Danube from the Drave; highest summit, Gross Glockner, in E. of Tyrol, 12,776 feet: the *Julian Alps* in Illyria, and the *Dinaric Alps* in Croatia and Dalmatia, between the Save and the Adriatic; highest summit, Mount Terglou, in central Illyria, 9343 feet.

THE SUDETIC OR BOHEMIAN AND MORAVIAN MOUNTAINS, forming the N.W. frontier, and consisting of the *Böhmerwald*, *Erzgebirge*, *Riesengebirge*, and *Sudetic Mountains* (see p. 252).

THE KRAPACKS OR CARPATHIANS in the east, forming a great curve, one extremity of which abuts on the Danube at Pressburg, and after separating Hungary from Galicia, and Transylvania from Moldavia and Wallachia, returns to the Danube at Orsova. The Carpathians form a part of the great water-parting of Europe, separating the basin of the Danube from those of the Vistula and Dniester. They are usually divided into two great sections—viz., the *Western Carpathians*, between Hungary and Galicia, and forming a crescent-shaped ring around the head-waters of the Theiss: highest summit, Gerlsdorfer Spitze, in the Tatra group, 8685 feet; and the *Eastern Carpathians* or *Transylvanian Alps*, between Transylvania and the Danubian principalities, separating the basin of the Theiss from that of the Lower Danube: highest elevation, Mount Botechetje, south of Kronstadt, 9528 feet. This mountain, to-

gether with many other summits, rises far above the snow-line, which, in this latitude, is about 6000 feet.

MOUNTAIN-PASSES.—The principal passes are the *Jablunka Pass*, on the route from Pressburg to Cracow, lon. 19° E.; *Borgo Pass*, between Bistritz and Bukowina; Gymes Pass, between Transylvania and Moldavia; *Bozo Pass*, *Tursburg Pass*, *Rothenthurm Pass*, and *Vulcan Pass*, between Transylvania and Wallachia; *Stelvio Pass*, 9100 feet, from Bormio in Lombardy to Glurus in the Tyrol; and the *Brenner Pass*, between the valleys of the Inn and Adige, 4650 feet high. The Austrian Government has made all these passes available for wheeled carriages at an enormous expense.

River-Basins.—Notwithstanding the great extent of the Austrian empire, the only great river-basin contained in it is that of the Danube, and even it only partially, its sources being in South Germany, and its lower basin in Turkey. Its direct length is estimated at 980 miles, and its area at 306,000 English square miles. The empire also embraces the upper basins of the Elbe (area of basin, 55,000 sq. m.), the Oder (45,200 sq. m.), and the Vistula (72,300 sq. m.)

The River-System of Central Europe.—The following table comprises the river-system of Central Europe from the Pregel to the Rhine, together with the basin of the Danube and the N.E. coast of the Adriatic. Capitals of kingdoms and provinces are distinguished by SMALL CAPITALS, towns of more than 10,000 inhabitants by Roman letters, and those between 5000 and 10,000 by *Italics*.

Basins inclined to the Baltic.

Rivers.	*Towns.*
Pregel,	KÖNIGSBERG, Insterburg, *Gumbinnen*.
Passarge,	Braunsberg.
Elbing,	Elbing.
Vistula,	Danzig, *Marienburg*, *Marienwerder*, n., Graudenz, *Kulm*, Bromberg, n., Thorn, PLOCK, WARSAW, Cracow.
Brahe, *l*	Bromberg.
Bzura, *l*	Lodz.
Bug,	Brzesc-Litewski.
Narew,	*Pultusk*.
Bobr,	*Augustowo*, n.
Bialy,	Bialystok.
Lni,	*Vladimir*.
Peltew, *l*	LEMBERG.
Radomka, *l*	RADOM.
Wieprz,	*Zamosc*.
Bistritza, *l*	LUBLIN.
Saan,	*Przemysl*.
Wisloka, *l*	*Rzeszow*.
Raba,	*Bochnia*
Biala, *l*	*Bielitz*.
Stolpe,	Stolpe.
Niesenbecke,	Köslin.
Persante,	Colberg.

Rivers.	*Towns.*
Rega,	*Neu-Treptow*, *Greifenberg*.
Oder,	STETTIN, *Schwedt*, Königsberg, n., Küstrin, Frankfürt, *Crossen*, Glogau, BRESLAU, *Ohlau*, Brieg, Oppeln, Ratibor, *Neutitschein*, n.
Ucker, *l*	*Pasewalk*, Prenzlow.
Ihna,	*Gollnow*, Stargard.
Wartha,	Landsberg, POSEN, Czentochov.
Netze,	*Inowrazlaw*.
Obra, *l*	Lissa.
Wilna,	*Gnesen*.
Prosna, *l*	Kalisz, *Kempen*, n.
Lower Neis- se, *l*	Guben, Görlitz, Reichenberg.
Mandau, *l*	Zittau.
Bober, *l*	*Sagan*, Sorau, n., *Bunzlau*, Hirschberg.
Queiss, *l*	*Lauban*.
Lunze, *l*	Grünberg.
Bartsch,	*Fraustadt*, n., Rawitsch.
Orta,	*Krotoszyn*.
Katzbach, *l*	Liegnitz, *Jauer*, n., *Goldberg*.

Basins inclined to the Baltic (continued).

Rivers.	*Towns.*
Weistritz, *l*	Schweidnitz.
Strieganer, *l*	*Striegau.*
Peile, ...	*Reichenbach.*
Oelsa, ...	*Oels.*
Upper Neisse, *l*	Neisse, *Frankenstein*, n., Glatz.
Holzem-plotz, *l*	*Neustadt*, n.
Klodnitz, ...	Gleiwitz, Beuthen.

Rivers.	*Towns.*
Zinna, *l*	*Leobschütz.*
Olsa, ...	*Teschen.*
Oppa, *l*	TROPPAU.
Peene, ...	*Wolgast*, n. Anclam, *Demmin.*
Str. of Gellen,	Greifswald, n., Stralsund.
Warnow, ...	Rostock.
Nebal, ...	Gustrow.
Co. of Mecklenburg-Sch.,	Wismar.

Basins inclined to the North Sea.

Elbe, ...	GLÜCKSTADT, Altona, HAMBURG, Harburg, MAGDEBURG, *Schönebeck*, DESSAU, Wittenberg, Torgau, *Oschatz*, Meissen, DRESDEN, *Pirna, Töplitz, Leitmeritz*, Kuttenberg, *Königgrätz.*
Schwinge, *l*	*Stade.*
Stör, ...	*Itzehoe.*
Ilmenau, *l*	Lüneburg.
Elde, ...	*Grabow, Ludwigslust*, n., *Parchim.*
Biese, *l*	*Gardelegen*, n.
Uchte, ...	*Stendal.*
Stepnitz, ...	*Perleberg.*
Dosse, *l* ..	*Wittstock.*
Havel, ...	*Rathenau*, Brandenburg, Potsdam, Spandau, NEU-STRELITZ.
Rhin, ...	Ruppin.
Nuthe, *l* ..	Luckenwalde, Jüterbogk.
Spree, *l* ..	BERLIN, Charlottenburg, Kottbus, *Spremberg*, Bautzen.
Ihle, ...	Burg.
Ohre, *l* .., ...	*Neu-Haldensleben.*
Nathe, ...	Zerbst.
Saale, *l*	*Kalbe*, BERNBURG, Halle, Merseburg, Weissenfels, Naumburg, *Jena*, RUDOLSTADT, Hof.
Bode, *l* ...	Quedlinburg.
Holzem-me,	Halberstadt.
Fuhne, ...	Köthen, n.
Wipper, *l*	Ascheraleben, n.
Böse, *l* ...	Eisleben.
White Elster,	Merseburg, Leipsic, Zeitz, GERA, *Ronneburg*, GREITZ, Plauen.
Pleisse,	Altenburg, Schmöllin, Crimmitzschau, Werdau.
Goltsch,	Reichenbach.
Unstruth,	*Langensalza*, Mühlhausen.
Helme, *l*	*Sangerhausen*, n.
Zerza, *l*	Nordhausen
Wipper, *l*	SONDERSHAUSEN.
Gera, ...	Erfurt, *Arnstadt.*
Leina,	GOTHA.
Ilm, *l*	WEIMAR.
Mulde, *l*	Eilenburg, *Grimma*, Glauchau, Meerane, n., Zwickau, *Lössnitz*, *Schneeberg.*
Münz-bach,	*Dobeln*, *Rosswein*, *Nossen*, Freiberg.
Zschopau, *l*	*Mittweida*, *Hainichen*, *Frankenberg*, *Zschopau.*
Chemnitz,	Chemnitz, Annaberg.
Black Elster,	Wittenberg, n.
Roda, *l* ...	*Grossenhain.*
Pulnitz, ...	Leipa.
Eger, *l*	*Leitmeritz*, *Saatz*, Eger.
Moldau, *l* ..	PRAGUE, Budweis.
Beraun, *l*	Pilsen, *Marienbad*, n.
Bradaw-ka,	*Klattau.*
Czidlina, ...	*Gitschin.*
Isar, ...	*Jungbunzlau.*
Chrudimka, *l*	*Chrudim.*
Lauchna, *l*	*Leitomischel.*
Weser and Werra,	BREMEN, *Nienburg*, Minden, *Hameln*, *Münden*; *Eschwege*, *Schmalkald* n., MEININGEN, *Hildburghausen.*
Hunte, *l* ...	OLDENBURG.
Berne, ...	*Berne.*
Aller, ...	Celle, *Helmstadt*, n.
Leine, *l* ..	HANOVER, *Eimbeck*, Göttingen.
Innerste,	Hildesheim.
Ruhine,	*Nordheim.*
Soze, ...	*Osterode.*
Ocker, *l* ..	BRUNSWICK, *Wolfenbuttel*, *Goslar.*
Zellerbach,	*Klausthal.*
Aue, ...	BÜCKEBURG.
Werre, *l*	Herford, Bielefeld, n., DETMOLD.
Diemel *l* ..	AROLSEN, n.

Basins inclined to the North Sea (continued).

Rivers.	*Towns.*
Fulda, *l*	Cassel, Hersfeld, Fulda.
Hörsel,	Eisenach.
Hasel,	*Suhl*, n.
Co. of E. Friesland,	*Norden.*
Ems,	Emden, *Leer.*
Haase,	Osnabrück.
Ahe, *l*	Münster.
Hunse,	Gröningen.
Hoorn Diep,	Assen.
Vecht,	*Enschede.*
Zwarte,	Zwolle.
Reest,	*Meppel.*
Rhine,	Kampen, *Raalte*, Deventer, Zutphen, Amsterdam, Leyden, Utrecht, Arnheim, Gouda, *Gorkum*, *Thiel*, Nimeguen, *Emmerich*, *Cleves*, n., Wesel, Crefeld, n., Düsseldorf, Neuss, Solingen, n., Mülheim, Cologne, Bonn, *Neuwied*, Coblentz, *Bingen*, Mayence, Worms, Mannheim, Speyer, Germersheim, Carlsruhe, Strasbourg, Basle, Schaffhausen, *Constance*, Vaduz, Coire.
Lippe,	*Hamm*, *Lippstadt*, Paderborn.
Sister-bach,	Sést.
Ruhr,	Duisburg, Mulheim, Bochum, n., Essen, n., *Arensberg.*
Emster,	Dortmund.
Baaren-bach, *l*	Iserlohn.
Wipper,	Remscheid, n., Solingen, *Ronsdorf*, Elberfeld, Barmen.
Lennep, *l*	*Lennep.*
Sieg,	*Siegen.*
Nette, *l*	*Mayen.*
Moselle, *l*	Coblenz, Treves, *Thionville*, Metz, *Pont-à-Mousson*, Nancy, *Toul*, Epinal, *Remiremont.*
Lahn,	Giessen, *Marburg*
Nahe, *l*	Kreuznach.
Glan,	Kaiserslautern, n.
Salzbach,	Wiesbaden.
Main,	Mayence, Frankfürt, Offenbach, Homburg, n., Aschaffenberg, Hanau, Würzburg, *Kissingen*, *Schweinfurt.*

Rivers.	*Towns.*
Nedda,	Homburg, n.
Tauber, *l*	*Rothenburg.*
Regnitz, *l*	Bamberg, Erlangen, Fürth, Schwabach.
Pegnitz,	Nürnberg.
Rezat,	Anspach.
Itz,	Coburg.
Red Mayn,	Baireuth.
Darm,	Darmstadt.
Weschnitz,	*Weinheim.*
Neckar,	Mannheim, Heidelberg, Heilbronn, Ludwigsburg, *Cannstadt*, Eslingen, *Kirchheim*, *Tübingen*, Reutlingen, n., *Rottenburg.*
Kocher,	*Hall.*
Ens, *l*	Pforzheim.
Rems,	*Gmünd.*
Nesenbach, *l*	Stuttgart.
Fils,	*Göppingen.*
Eschatz,	Reutlingen, *Ehningen.*
Starzel,	Hechingen.
Speyer, *l*	Speyer, *Neustadt-an-der-Haardt.*
Salzbach,	*Bruchsal.*
Queich, *l*	Landau.
Murg,	Rastadt.
Oosbach, *l*	*Baden-Baden.*
Moder, *l*	Haguenau, *Bischwiller.*
Zorn, *l*	*Saverne.*
Kinzig,	*Lehr*, n.
Ill, *l*	Strasbourg, *Schelestadt*, Colmar, Mühlhausen.
Liepvrette, *l*	St Marie-aux-Mines.
Thur, *l*	Mühlhausen, *Thann.*
Elz,	Freiburg, n.
Ergolz, *l*	Liesthal.
Aar, *l*	Aarau, Soleure, Berne.
Limmat,	Zurich, *Wädenschwyl.*
Linth, *l*	Glarus.
Reuss,	Lucern, Altorf.
Lorze,	Zug.
Sarnez	Sarnen.
Aa, *l*	
Engelberg Aa, *l*	Stanz.
Muota,	Schwytz.
Emmen,	Soleure, *Langnau.*
Thiele, *l*	Bienne, Neufchatel.
Sarine, *l*	Freyburg.
Toess, *l*	*Winterthur.*
Thur, *l*	Frauenfeld, n.
Sittern,	*Herisau*, Appenzell.
Steinach, *l*	St Gall.

Basins inclined to the Black Sea.

Rivers.	*Towns.*
Danube,.....	Baba-Dagh, Tultcha, Kilia, Ismail, *Isaktchi*, *Reni*, Galacz, Braila, *Hirsova*, *Rassova*, Silistria, *Olitenitza*, *Giurgevo*, Rustchuk, Sistova, Nicopoli, Widdin, Semendria, Pancsova, n., BELGRADE, Semlin, Peterwardein, Neusatz, *Apatin*, Zombar, n., Mohacs, Funfkirchen, n., Baja, *Kalocsa*, *Pakz*, *Solt*, Földvar, *Duna-Vecze*, Pesth, BUDA, Alt-Ofen, Waitzen, Gran, *Dorog*, Komorn, Pressburg, VIENNA, Linz, Passau, Straubing, Ratisbon, Ingolstadt, *Neuburg*, Ulm, *Tuttlingen*.
Pruth, *l*....	Csernowitz, Sniatyn, Kolomea.
Baglui,...	JASSY.
Sereth, *l*....	Galacz, *Bakz*, Roman.
Milkov, ..	*Foktchany*.
Jalomnitza, *l*	*Tergovist*.
Lom, ...	*Rasgrad*, n.
Argish, *l*....	BUCHAREST, n.
Jantra, ...	Tirnova.
Alt, *l*.....	Kronstadt, n.
Zibin,....	Hermannstadt.
Isker, ...	Sophia.
Schyl, *l*.....	Krajova.
Harasch, *l*..	Versetz, n.
Morava, ...	Semendria, n., *Passarovicz*.
W. Morava, *l*	*Karanovacz*.
Ibar,...	Novi-Bazar, Pristina, Kossova.
Nissawa,..	Nissa or Nisch.
Karasch, *l*..	Versetz, n.
Temes, *l*....	Pancsova, TEMESWAR, *Lugos*.
Save, ...	BELGRADE, *Mitrovitz*, AGRAM.
Drina,....	Zvornik.
Bosna, ...	BOSNA-SERAI, n.
Posega, *l*	*Posega*.
Verbas, ..	*Banialuka*.
Unna,....	*Dubicza*, *Novi*.
Kulpa,....	*Karlstadt*.
Laybach,..	LAYBACH.
Theiss, *l*....	Nagy-Kikinda, Zenta, Theresienstadt, Szegedin, Vasarhely, Szentes, Felegyhaza, n., Kecskemet, n., Nagy-Körös,

Rivers.	*Towns.*
Theiss— *continued.*	n., Nyiregyhaza, Czegled, Szolnok, *Mitika*, *Tokay*, *Szigeth*.
Alt-Bega, *l*	Becskerek.
Maros, *l*..	Szegedin, Arad, *Lippa*, Mako, *Karlsburg*, Maros-Vasarhely, *Szasz-Regen*.
Aranyos,	*Thorda*.
Körös, *l*..	Szarvas, Bekes, Csaba, Gyula.
Berettyo,	Mezö-Tur, Kardzag.
Sebes- Körös,	Bözörmeny, Grosswardein.
Zagyva,...	Gyongyos, n.
Erlau,....	Erlau.
Koselo,...	Debreczin, Szoboszlo.
Hernad,..	Kaschau, *Iglo*, *Leutschau*.
Sajo,....	Miskoltz, *Rosenau*, *Schmölnitz*.
Tarcza, *l*	*Eperies*.
Bodrog, *l*	*Ujhely*, n., *Munkacs*, n.
Szamos, *l*	Szathmary, KLAUSENBURG.
Krasna, *l*	*Nagy-Karoly*.
Lapos,..	*Nagy-Bany*.
Szamos,	*Bistritz*, n. (on the Bistritz).
Drave, ...	Essek, *Warasdin*, *Ekibach*.
Mur, *l*....	GRATZ.
Glan, ...	Klagenfürt.
Sarvitz,.....	*Szexard*, Stühlweissenburg.
Kapos,....	*Keszthely*.
Sed,.....	Veszprim.
Gran, *l*.....	*Gran*, Schemnitz, n., *Kremnitz*, n., *Neusohl*.
Waag, *l*.....	Komorn, *Tyrnau*.
Raab, ...	Raab, Papa, n.
Leitha, *l*..	Neustadt.
Torna, ...	Vasarhely-Somlo.
Raabnitz,	Oedenburg, n.
Guns, *l* ..	*Guns*.
March or Morava, *l*	Pressburg, Olmütz, Sternberg, n.
Thaya,....	*Nikolsburg*, n., *Znaym*.
Schwartza, *l*	Schwart-Bathen.
Igliawa,	Igiau.
Litta-wa, *l*	*Austerlitz*.
Miava, *l*..	*Miava*.
Rumza,...	Prossnitz.
Trasen, ...	*St Polten*.
Enns, ...	Steyer.
Inn, ...	Passau, INNSBRÜCK.
Salza, ...	Salzburg.

Basins inclined to the Black Sea (continued).

Rivers.	*Towns.*	*Rivers.*	*Towns.*
Isar,	Landshut, *Freising*, Munich.	Wornitz, *l.*	*Dinkelsbühl.*
Naab, *l.*	Amberg, n.	Eger,	*Nördlingen.*
Alt Mühl,	*Eichstadt.*	Iller,	Ulm, Kempten.
Lech,	Augsburg.	Aach,	*Memmingen.*

Basins inclined to the Adriatic.

Isonzo,	See under "Italy."	Kerka,	Knin.
Gulf of Trieste,	Trieste, *Capo d'Istria*, *Pirano.*	Cicola, *l.*	*Dernis.*
		Cettina,	Sign.
W. co. of Istria,	Rovigno, Pola.	Narenta,	*Gabella*, Mostar.
Gulf of Fiume,	Fiume.	Bistritza,	Imoschi, n., *Livno.*
Morlacca Chan-nel,	*Zengg.*	Tribinschucza,	Trebigno.
Co. of Dalma-tia,	Zara, Bencovas, n., Sebenico, Spalatro.	W. co. of Dal-matia,	Ragusa, *Castelnuovo.*

Lakes.—In the basin of the Danube are *Balaton* or *Platten See* and *Neusiedler See*, in the west of Hungary;* *Traun See* and *Atter See*, in Upper Austria; *Wörth See* and *Weissen See*, in Carinthia. The Isonzo drains *Lake Zirknitz*, in Carniola.

Climate.—The climate differs very greatly in the different provinces, but the entire empire is comprised between the isotherms of 50° and 60° Fahr. The mean annual temperature of Vienna, in the centre of the Austrian dominions, is 51°.45, winter 32°, and summer 69°.4.

German writers divide the empire into three zones—a northern, middle, and southern. The first, which embraces Bohemia, Moravia, Silesia, with the higher parts of Hungary and Galicia—in all, about 70,000 sq. miles—greatly resembles in its average temperature the British Isles and Northern France; wheat, barley, oats, and rye forming the usual crops. This may be called the *zone of grain, hops, and hemp.* The central zone, extending from lat. 49° to 46°, is the zone of *maize, wheat, and the vine*, embracing an area of about 150,000 sq. miles; while the third or southern zone, embracing the part of the empire south of 46°, is that of the *olive, mulberry, figs, and rice.* The line of equal rainfall of 40 to 45 inches proceeds from Lake Garda in the Tyrol, to Trieste, Fiume, and Karlstadt in Croatia; in the Alps it rises to 55, 60, and even to 70 inches; but in Vienna and the low-lying districts 28 inches are a frequent average. Storms are rare in Lower Austria, but in the provinces at the head of the Adriatic they are very frequent and violent. Earthquakes, also, and thunderstorms, are very frequent in the latter region, as well as in Hungary and Transylvania.

Geology and Minerals.—A full half of the empire is covered with tertiary and post-tertiary accumulations, which prevail especially in the basin of the Danube, between the Save and the Carpathian Mountains. Secondary strata occupy extensive areas in the Carnic

* The Hungarian lakes occur in low swampy plains, and are shallow and uninteresting. Those of Salzburg are very small. Zirknitz is remarkable for the periodic disappearance of its waters through apertures in the bottom; in winter it abounds with fish, but in summer its bed is dry and regularly cultivated.

and Julian Alps, in the greater part of Dalmatia, Croatia, and Illyria, together with a large belt in the N.W., extending from Vienna to Lake Constance. The palæozoic series are principally confined to the W. of Bohemia, the N. of Moravia, Central Silesia, parts of Tyrol, Upper Austria, and Styria, extending in a long belt from Innsbrück to Neustadt, and in detached patches in Illyria and Croatia. Crystalline rocks prevail in the Eastern Carpathians, and occupy a large portion of the surface of the north-western provinces, especially between Regensburg and Linz on the Danube, to Brünn on the Schwartza. Igneous rocks line the southern flank of the Carpathians, and occur also in Transylvania; and granitic rocks are common in the S.E. of Bohemia and the N. of Upper Austria.

Minerals.—No country in Europe excels Austria in regard to mineral wealth. Almost every valuable kind of mineral is found in inexhaustible quantities. The precious metals are very abundant in Hungary (the only country in which the true opal has been found), Transylvania, and Bohemia; the most celebrated mines being those of Schemnitz and Kremnitz, in North-Western Hungary. Coal, iron, and copper, are abundant in all the provinces. Native steel, more valuable than that made by artificial means, is found in Styria, Carinthia, and Carniola. Tin, so rare in most countries, abounds in Bohemia. A very valuable mine of quicksilver, second only to that of Almaden in Spain, is worked at Idria in Carniola. Lead is found in Carinthia, antimony in Hungary, sulphur and arsenic at Schemnitz. Salt, building-stones of every variety, and precious stones, are widely diffused; and thermal and mineral springs are numerous—the most celebrated being those of Karlsbad, Töplitz, Eger, Sedlitz, and Marienbad, in Bohemia; of Baden in Lower Austria; of Gastein in the Tyrol; and the Hercules baths in the Banat.

Botany and Agriculture.—The portion of Austria situated N. of lat. 46° is embraced within Schouw's second botanical region, or the *region of the Umbelliferæ;* the remainder, consisting of Dalmatia, Croatia, &c., is included within the third or *Mediterranean region* of that naturalist; while the higher elevations of both pertain to his *Arctic-Alpine region*—(see under "Europe"). The total number of indigenous plants in the empire has not been ascertained, but the whole of Germany, using the term in its widest acceptation, is said to contain 7000 species, of which 2566 are flowering-plants, subdivided into 529 monocotyledons and 2037 dicotyledons. The vegetation of the empire is therefore very extensive and varied, that of Hungary alone embracing nearly all the plants indigenous to Europe, with many others that have been imported. About a fourth part of the entire surface is covered with forests. The Alps and Sudetic Mountains produce the pine, birch, and larch; the Carpathians, firs, pines, and beeches; while the magnificent forests of the Hungarian and Polish provinces consist for the most part of the oak, beech, and elm. The trees attain in many places a gigantic size; and the timber, which is of excellent quality, and well adapted for house and ship building, is largely exported.

Agriculture.—Though the soil is characterised by great diversity, it is

for the most part highly fertile; and notwithstanding the antiquated and unskilful methods employed in husbandry, the crops are rich and abundant. In the vicinity of the large rivers the soil consists of a black vegetable mould, which is admirably suited for the growth of wheat. In some parts of Hungary no manure is required for the production of the choicest crops. It is estimated that about one-third of the whole surface is under tillage. In the northern provinces, the usual cereals raised are wheat, buckwheat, rye, oats, and barley; in the central provinces, maize and wheat; while in the southern are maize and rice. The Banat, Hungary, and Galicia, are the principal corn-growing provinces, and rye forms everywhere the chief food of the people. Vines, hops, tobacco, saffron, flax, hemp, and a great variety of fruit-trees, are also cultivated; and mulberry-trees, for silk-worms, are extensively grown in Dalmatia and Hungary. Vineyards occupy about half a million acres of the surface, and yield between 4 and 5 million hhds. of wine annually. The parts of the country best adapted for the culture of the vine are Styria, Lower Austria, and the N.E. of Hungary; but the wines are of inferior quality, except those produced in the upper basin of the Theiss, especially those of Tokay, which have been long celebrated for their excellence. The vine cannot be cultivated at a higher elevation than 1750 feet; the oak extends to the height of 3000 feet, the cereals generally to 4500 feet, pines to 6000 feet, and pasture to the limit of perennial congelation, which in the Alps is at a height of 8900 feet. Pasture-lands are limited in extent, save in the Alpine provinces and Moravia, where cattle are numerous and the produce of the dairy considerable. In Hungary and Galicia great attention is paid to the rearing of sheep, horses, and cattle; great quantities of wool are exported from the Buckowina; and goats, swine, and poultry from most of the provinces. The oil of Southern Illyria is superior to that of Spain and Italy.

Zoology.—The fauna of Austria is, in general, the same as that of Germany, and the remainder is common to Italy and European Turkey. Of the 78 species of Mammalia inhabiting Central Europe, 41 are carnivora, 22 rodentia, 9 ruminantia, and 1 pachyderm. The following are the principal species:—the bear, wolf, fox, lynx, and chamois, in the Alps and Carpathians; the marten, otter, marmot, beaver, wild-boar, wild-cat, jackal, stag, deer, hare, and rabbit, in Dalmatia. Of the 305 species of birds belonging to the same zoological province, the eagle, vulture, hawk, and other birds of prey, are common in the mountains; and the pheasant, wild-duck, white heron, and game of all kinds, in the plains. Canaries are reared in great numbers in the Tyrol, whence they are largely exported. Among the 31 reptiles the most remarkable is the *Proteus anguineus*, an animal resembling the water-lizard, found in Lake Zirknitz in Carniola. Fishes are abundant in most of the rivers, especially in the Theiss and Lower Danube, where the sturgeon and pike attain to a vast size. The fresh-water fishes of Carniola alone amount, according to Freyer, to 32 species. The marine species, which include the mackerel, tunny, and anchovy, are embraced within Forbes's 'Mediterranean Region of Marine Life,' which also embraces the Black Sea. A pearl-bearing mollusc inhabits the waters of Hungary, Bohemia, and the Archduchy of Austria, and a regular pearl-fishery is established on the Vatava. Insects are abundant

in the low marshy grounds of Hungary, especially gnats and flies; bees, Spanish flies, and the cochineal insect, are reared in great numbers; leeches are numerous on the Neusiedler See, and are largely exported for medicinal purposes; and corals are collected on the coast of Dalmatia.

Ethnography.—The people of Austria comprise four great races, which, in 1869, existed in the following proportions,—viz., Sclavonians, 16,200,000; Roumans (including Italians and Wallachians), 3,450,000; Germans, 9,040,000; Magyars, 5,430,000; Jews, Gypsies, and other races, 1,354,000. The Sclavonians form the majority in Bohemia, Moravia, Silesia, Illyria, Dalmatia, and Hungary, and constitute almost the entire population of Galicia. The Roumans, or people speaking Romannic languages, are numerous in the southern part of the Tyrol and the maritime districts of Illyria and Dalmatia. The Germans predominate in Styria and the Tyrol, are very numerous in Bohemia, and are almost the sole inhabitants of Upper Austria, Lower Austria, and Salzburg. The Magyars are the dominant race in Hungary and Transylvania. The Jews are most numerous in the towns of Galicia, Bohemia, Moravia, and Hungary; and the Gypsies, Armenians, and Greeks, are scattered over all the eastern provinces of the empire.

Language.—The languages spoken in this extensive empire belong to four distinct families—viz., the Sclavonic, Teutonic, Greco-Latin, and Finno-Tartarian. To the first belong the *Russniak*, spoken by the Sclavonian population of Galicia and Hungary; the *Servian*, in parts of Dalmatia, Sclavonia, and Military Croatia, where it forms the vernacular of about 1,300,000; the *Bohemian* or *Tchekhian*, spoken by from 3,000,000 to 4,000,000 of the population of Bohemia and Moravia, the *Slowak* or *Slovakian*, by about 1,800,000 in the N.W. of Hungary. The Slowaks are descendants of the original Sclavonic settlers in Hungary, who, in 894, were conquered by the Magyars; but though a subjugated race, they still retain their original language, as a remnant of their ancient national existence. The second or Teutonic family of languages is represented by the *German*, which is the language of the Court and of literature, and is spoken by nearly 9,000,000 of the population, who reside for the most part in the nine German provinces, and especially in the Archduchy of Austria, Salzburg, Styria, and the Tyrol.—(See under "Germany," where the literature will also be found.) The Greco-Latin family is mainly confined to the coasts of the Adriatic, and is represented by three languages—viz., the *Italian*, in the south of the Tyrol; the *Wallachian* or *Daco-Romana*, in the south of Transylvania, into which it has spread from the Turkish provinces of Wallachia and Moldavia; and the *Albanian* or *Arnaute*, the remains of a language long extinct, and which formed an intermediate link between several distinct families, in the southern parts of Dalmatia. The Arnauts differ in language and physical conformation from all the other nations of Europe, and are supposed to be descended from the ancient Illyrians. The Finno-Tartarian family is represented by the *Magyar* or *Hungarian*, which is spoken by 4,820,000 of the population of Hungary—the remainder consisting of Slowaks, Croatians, Germans, Russniaks, Wallachians, and Jews. The Magyars are a people of Finnish extraction, and closely allied to the Ostiaks and Woguls, barbarous hordes who lead a wandering life in the upper and central basin of the

Obi. They entered Europe in the ninth century, and subdued Hungary in the short space of ten years; and though then differing in few or no respects from the other savage tribes of Central Asia, they now take rank among the foremost nations of Europe in physical, moral, and intellectual qualities. Their language has experienced a similar transmutation, from its long-continued contact with European civilisation; but it still retains those well-marked features which have always characterised the Finnish branch of the linguistic family to which it belongs. For example, the Magyar resolves its vowels into two classes, one of which (a, o, u) denotes the masculine, and the other (e, i, ö, ü) the feminine; and the individual words of the language are so formed that a masculine and a feminine vowel are never allowed to meet in the same vocable, whether simple or compound. This curious characteristic of the Finnish dialects strongly reminds the Celtic scholar of the well-known principle, *leathan ri leathan is caol ri caol;* or "broad to broad, and small to small."

Religion.—According to the 'Almanach de Gotha' for 1870, the different religious persuasions in the empire contained the following numbers in 1864: Roman Catholics, 23,265,000; Greek Catholics, 3,861,000; Protestants (chiefly Reformed), 3,495,000; Jews, 1,121,000; Unitarians and other sects, 63,000. The Protestants are chiefly found in the Hungarian provinces; about half the Magyars are Calvinists, and a large proportion of the remainder Lutherans, who are also numerous in the German provinces. The adherents of the Greek Church are most numerous in Galicia, where they amount to upwards of 2,000,000; but they are found in considerable numbers in all the eastern provinces.

Education.—Of late years education has made rapid advances throughout the empire, though it is still far behind Prussia. In the German provinces primary schools are numerous and efficient, but in the southern and eastern provinces a great obstacle to efficiency is presented by the different languages spoken by the pupils, there being sometimes no fewer than three or four in a single school. The law requires that every child between the ages of six and twelve shall be educated either in school or at home; while in the manufacturing districts no child is allowed to be sent to a factory before completing his ninth year, and even then he is obliged to attend classes twice a-week until fifteen years of age. In some parts of the empire marriage is prohibited until the parties can prove their ability to read, write, and cipher. There are eight universities in the empire—viz., at Vienna, Prague, Grätz, Olmütz, Innsbrück, Lemberg, Cracow, and Pesth. The number of students attending these, in 1870, was 9000, one-fourth of whom belonged to the University of Vienna, which is the seat of the most famous medical school in Germany.

Government, Army and Navy, Revenue, &c.—The form of government is an hereditary, and, in some respects, a constitutional monarchy. Previous to the late war with Prussia, the Emperor of Austria was all but absolute in his own dominions, and also occupied the first rank in the Germanic Confederation. As the result of that war, he is wholly excluded from taking part in the political affairs of North and South Germany, and has been obliged greatly to augment the liberties of his own subjects. The entire empire now forms a sort of double state, one half consisting of the German provinces, or Austria Proper, and the other of the Magyar or Hungarian

provinces. Each of these divisions has its own parliament, laws, ministers, and government, but are united into one whole by the emperor, and by a common parliament, named the Delegations, consisting of 120 members, chosen in equal numbers by the two grand divisions of the empire. All matters affecting the common interests of the two sections—especially foreign affairs, war, and finance—come under the jurisdiction of this body. *Army and Navy.*—In January 1871, the total number of troops, on the peace footing, numbered 278,470, with 42,200 horses. The navy consisted of 45 steamers, carrying 639 guns, with 11,730 horse-power, together with 10 sailing vessels, with 79 guns. Austria also possesses 24 fortresses, many of them of great strength. The *Revenue*, in 1870, amounted to £51,241,000; the *Expenditure*, to £58,438,000; and the *Public Debt*, to £302,531,000. About a third of the entire revenue is derived from direct taxes on land, houses, industry, and income, and the remainder from indirect imposts, the chief items being customs, and the duties on salt, timber, and tobacco. The public debt is advancing at a rate which threatens national bankruptcy. In 1846 it was only £103,000,000; in 1856, £241,207,000; while it is now £348,531,000.

Commerce, Manufactures, Exports, and Imports.—The foreign commerce of Austria is comparatively unimportant, the sole outlets being Trieste and Fiume on the Adriatic, and Constantinople and Trebizond on the Black Sea, to which the only access is by steam navigation on the Danube. The inland trade, however, is very considerable, the empire, owing to its vast dimensions, being comparatively independent of other countries. In 1868, the number of merchant vessels that entered the port of Trieste was 11,056, carrying 1,006,211 tons; cleared, 10,956 vessels, carrying 1,052,068 tons. The total value of the imports of the empire in 1871, excluding bullion, amounted to £30,628,031, and the exports to £40,085,568. Nearly two-thirds of both exports and imports is carried on with North and South Germany. Austria's next best customer is Turkey, which sends into the empire about £3,000,000 worth of goods annually, and receives Austrian exports to the value of above £5,000,000. Italy, Russia, and the United Kingdom follow next in order, but at a great distance. The principal commodities exported from Austria to the British Isles are corn, flour, hemp, tallow, glass beads, olive-oil, wine, quicksilver, currants, cream of tartar, lard, seeds, shumac, sponge, wood, and wool; while our chief exports to Austria are cotton and woollen manufactures, averaging annually about £830,000. Very little Hungarian wine finds its way to British ports, though, as a wine-producing country, Austria is second only to France. The manufactures of the empire are mainly confined to the German provinces, and especially to Bohemia and Moravia. The former is celebrated for its linen, cotton, and woollen fabrics, and still more for its manufacture of glass. Moravia is also much engaged in the woollen industry, and has, in Brünn, the second largest manufacturing town in the empire. The capital, however, is the great seat of

the **manufacture of articles of taste, as jewellery, glass, carriages, porcelain, silk, and books.** Hungary is very largely engaged in the production of wine and the metals. Mining also forms an important branch of industry in Bohemia and the mountainous parts of Upper Austria, Styria, and Carinthia. Wooden articles are executed with much ingenuity in the Tyrol, while leather and linen goods are produced in all parts of the empire.

Internal Communication.—The Danube, with its navigable tributaries the Theiss, Save, and Drave, is the great commercial thoroughfare of the empire. The current of the main river is so rapid that steamers alone are now employed. Steamers are also extensively used on the other navigable rivers and lakes. The total extent of river navigation in the empire is estimated at 4300 miles. There are few *Canals*, except in lower Hungary.

RAILWAYS have made great progress, and connect the capital with the most distant points of the empire. In 1859, 2086 miles were open for traffic; and in 1871, no fewer than 10,000 m., embracing the following principal lines: Vienna to Brünn, Olmütz, and Prague, and thence to Dresden and Berlin. Vienna to Troppau, Cracow, Lemberg, and Czernowitz. Vienna to Pressburg, Pesth, Szegedin, and Temeswar; with a branch from Czegled to Grosswardein, Debreczin, and Tokay. Vienna to Raab, Komorn, Stühlweissenburg, and Warasdin. Vienna to Grätz, Cilly, Laybach, and Trieste; with a branch from Cilly to Agram. Vienna to Linz, and thence to Ratisbon and Innsbrück. Another important line traverses the Tyrol from Munich, in Bavaria, through the Brenner Pass, to Verona and Venice. Excellent *carriage-roads* have also been constructed at great expense between all the leading cities of the empire. That from Pavia in Italy to Czernowitz in Galicia, 1120 miles in length, is carried across rivers and mountain-chains, and is macadamised throughout. Similar roads connect the capital with Prague, Buda, Trieste, and Milan. Upwards of sixty *mountain-passes* have been rendered practicable for wheeled carriages, at an enormous expense. The principal of these are enumerated above, see p. 261.

SWITZERLAND.

Position and Boundaries.—N., Lake Constance and Grand-duchy of Baden; W., France; S., Italy; E., the Tyrol. Lat. 45° 50′—47° 50′ N.; lon. 5° 55′—10° 30′ E.

Bern, the federal capital, is nearly on the same parallel with Nantes, Grätz, Jassy, Azov, and Astrakhan; and nearly on the same meridian as the Naze, Münster, Strasbourg, and Turin. The general outline is elliptical; greatest length from E. to W., 216 miles; extreme breadth, 140 miles. The surface is more mountainous than in any other country in Europe, two-thirds of the whole being occupied with lofty mountain-chains, and the remaining third consisting of an elevated plateau, about 1300 feet above the level of the sea, and studded with many beautiful lakes. This plateau forms an elongated, undulating plain, crossing the country from S.W. to N.E., with a length of about 140 m., and an average breadth of between 20 and 30 m.

Area and Population.—The area of the Confederation amounts to 15,716 sq. m., being a little more than the half of Scotland; while the population, in 1870, was 2,669,095, or four-fifths of the population of Scotland, being 161 persons to each sq. m.

Political Divisions.—Switzerland is divided into twenty-two cantons, which comprise, however, twenty-five distinct states, three of the cantons—Basle, Appenzell, and Unterwalden—being subdivided into two states each. There are seven western cantons; twelve north-eastern, including the four forest cantons of Schwytz, Luzern, Unterwalden, and Uri; and three southern cantons.

SEVEN WESTERN CANTONS.

Geneva.—GENEVA 47 (Rhone), Carouge 6 (Arve).

Vaud.—LAUSANNE 27, Vevay 6 (Lake of Geneva).

Fribourg.—FRIBOURG 11 (Sarine), *Morat* (Lake Morat).

Neuchâtel.—NEUCHATEL 13, Vallengin 6 n. (Lake Neuchâtel), Chaux-de-Fonds 20 n., Locle 8 n. (Doubs).

Bern.—BERN 36, Thun 5 (Aar), Bienne 6 (Lake Bienne), Langnau 5 (Emmen), *Laupen* (Sarine).

Soleure.—SOLEURE 5, Olten 2 (Aar).

Basel.—BASLE or BÂLE 45, cap. of Bâle Ville (Rhine); Liesthal 3, cap. of Bâle Campagne (Ergolz).

TWELVE NORTH-EASTERN CANTONS.

Aargau.—AARAU 5 (Aar), Baden 3 (Limmat).

Zurich.—ZURICH 21, Wadenschyl 5 (Limmat), Winterthur 7 (Toess).

Schaffhausen.—SCHAFFHAUSEN, 10 (Rhine).

Thurgau.—FRAUENFELD 2 (Murg).

St Gall.—ST GALL 17 (Steinach), *Sargans*, *Pfeffers* (Rhine).

Appenzell.—APPENZELL 3, cap. of Inner Rhoden, Herisau 3 n. (Sittern), Trogen 3, cap. of Ausser-Rhoden (Goldach).

Glarus.—GLARUS 5, *Näfels* (Linth).

Schwytz.—SCHWYTZ 2 (Muota), *Morgarten* (L. Egeri).

Zug.—ZUG 4 (Lorze).

Luzern.—LUZERN 15 (Reuss), *Sempach* (L. Sempach).

Unterwalden.—STANZ 2, cap. of Nidwalden (Engelberg Aa), Sarnen 3 cap. of Obwalden (Sarner Aa).

Uri.—ALTORF 2, *Bürglen*, n. (Lake Luzern).

THREE SOUTHERN CANTONS.

Grisons.—COIRE or CHUR 5 (Rhine), *Bernhardin*, *Splügen*.

Ticino or Tessin.—BELLINZONA 2, Locarno 3 (Ticino), Lugano 5 (Lake Lugano).

Valais.—SION OR SITTEN 4, *Martigny*, *Leuk* (Rhone).

Descriptive Notes.—The towns are remarkably few in proportion to the population, there being only five (Geneva, Bâle, Bern, Lau-

nanne, Zurich), which exceed 20,000, and six (Neufchâtel, Chaux-de-Fonds, St Gall, Luzern, Fribourg, Schaffhausen) bet. 20,000 and 10,000.

Geneva, finely situated on the Rhone, where it issues from the lake, is the largest city in Switzerland; noted for its manufacture of watches and jewellery; has a Protestant college, and contains the federal arsenal. The names of Calvin, Beza, Knox, Cranmer, Lesage, Deluc, Lefort, Rousseau, Necker, Saussure, and De Candolle adorn the annals of this famous city. **Lausanne**, on the Lake of Geneva, in the midst of enchanting scenery, has several manufactures, and numerous educational institutions. **Fribourg**, a busy manufacturing town on the Sarine. **Neuchâtel**, or **Neufchâtel**, on the lake of same name, is a place of great trade, especially in wine, corn, cattle, and watches; has a college, and a cathedral where the doctrines of the Reformation were preached as early as 1530. **Chaux-de-Fonds**, like Geneva, is noted for its manufacture of watches. **Bern**, the seat of the federal diet, and therefore usually regarded as the capital of Switzerland, pleasantly situated on the Aar, and in pop. inferior only to Geneva and Bâle; has a university, founded in 1834; a public library, containing numerous books and MSS. on Swiss history; numerous manufactures, especially of gunpowder, firearms, mathematical instruments, straw-hats, paper, and leather; the birthplace of Haller the poet. **Thun** (pronounced Toon), on the Aar, near where it issues from the lake, is renowned for its romantic situation. **Soleure**, a small town on the Aar, with a college, a public library, and botanic garden; here Kosciusko died in 1817. **Basle** or **Bâle** (*Ger.* Basel), a celebrated and ancient city on the Rhine, near its great bend. It dates from the fourth century, and in the eleventh was the most powerful city in Helvetia; it was the seat of a great council (1431-1437), and of a memorable treaty between France and Prussia in 1795: it is now the second city in the confederation in point of population; contains a university, and numerous manufactures of silk ribbons: the birthplace of Euler and Bernouilli, the celebrated algebraists, and of the two Holbeins: here also Erasmus died in 1536. **Zurich**, the Athens of Switzerland, contains a university; has important manufactures of silk and cotton fabrics: here Zwingle preached, and here the first entire English version of the Scriptures (Coverdale's) was printed in 1535; it is the birthplace of Gessner, Lavater, and Pestalozzi. **Schaffhausen**, on the Rhine, near its picturesque falls, has a college, and several manufactures. **Frauenfeld**, a small town on the Murg, with cotton-mills and dye-works. **St Gall**, **Appenzell**, and **Herisau**, have extensive manufactures of muslin and of silk and cotton fabrics. **Glarus** exports cheese in great quantities, and has printing and dyeing works. **Luzern**, the cap. of Catholic Switzerland, is celebrated for its beautiful scenery, and has a lyceum with 14 professors. **Altorf**, famous for the resistance of William Tell to the tyrant Gessler, in 1307. **Coire** (*Fr.* Chur), in the valley of the Upper Rhine, has an active transit-trade and some manufactures.

Mountains.—Switzerland is by far the most mountainous country in Europe, and the one which contains the grandest scenery. There are three principal ranges:—

The *Pennine Alps*, in the S.W., between Switzerland and Piedmont, and between the basins of the Rhone and Po, contain Mont Blanc, in Savoy, the loftiest summit of the Alps, and now (since 1860) the culminating point of France, 15,781 feet high; Great St Bernard, 11,080

feet; Mont Cervin, 14,705 feet; and Monte Rosa, the culminating point of Switzerland, 15,217 feet: height of snow-line, 8900 feet.

The *Lepontine or Helvetian Alps*, between Switzerland and Lombardy, form the water-parting between the basins of the Rhine, Rhone, and Po: highest summits, the Simplon, 11,510 feet, and Mount St Gothard, 10,900 feet.

The *Bernese Alps*, between the cantons Bern and Valais, and between the Aar and Upper Rhone: highest summits, Jungfrau, 13,718 feet; Schreckhorn, 13,386 feet; Finster-aar-horn, 14,100 feet; the Grimsel, 9700 feet.

Mountain-Passes.—The following are some of the most celebrated passes among the Swiss Alps, arranged in the same order as the mountain-chains:—

1. *Pass of Great St Bernard*, 8150 feet high, leads through the Pennine Alps from Aosta, in Piedmont, to Martigny, in the Valais; traversed by Napoleon with his army in 1800: the Hospice, erected at its highest point, is the most celebrated institution of the kind in all the Alps. 2. The *Cervin Pass*, 10,938 feet high—the loftiest in Europe—leads from Chatillon, on the Dora-Baltea, to Visp, in Canton Valais. 3. The *Simplon Pass*, 6578 feet high, leads from Milan and Domodossola to Canton Valais: it is a great work, executed by Napoleon at prodigious labour and expense; is 38 miles long, 30 feet wide, passes over 611 bridges, and through several extensive tunnels. 4. *Pass of St Gothard*, 6808 feet high, from Bellinzona on the Ticino, to Altorf on the Reuss: it is the only road carried over the crest of the mountains, all the others being conducted through deep gorges and beds of mountain-torrents. It is now a good carriage-way, and has long been a line of great commercial importance. 5. *Pass of Bernhardin*, 7015 feet high, from Bellinzona to Chur, one of the principal routes of commerce between Italy, Switzerland, and Germany. 6. The *Splügen Pass*, 6946 feet high, from Chiavenna in Lombardy to the Grisons, was passed by a French army in 1800, but greatly improved by the Austrian government in 1823, and carried through three covered galleries, which are the longest in the Alps. It has now nearly superseded the *Septimer Pass*, 7611 feet high, which was formerly the ordinary route from Eastern Switzerland into Italy. 7. The *Gemmi Pass*, through the Bernese Alps, 7595 feet high, leading from Canton Bern to Valais, about 24 miles south of Thun. 8. The *Grimsel Pass*, 7126 feet high, through the same chain, at the southern extremity of the Hasli Valley. For the remaining passes across the Alps, see under "Italy" and "Austria."

Glaciers, &c.—The glaciers of the Swiss and Italian Alps are among the grandest and most remarkable phenomena in nature. They consist of huge masses of ice, or of snow that has been partially melted by the heat of summer, but which has afterwards been congealed, and which, quitting the higher level, descend far below the usual snow-limit, into the region of cultivation.

This descent is owing to the inclination of the bed, the annual accumulation of snow during winter in the higher levels, the viscous or semi-fluid character of its structure, and other causes. The rate of motion in the descent is different in different glaciers, according as the elements just specified vary; and it is *continuous*, though not *uniform*, in all, never being wholly arrested, even during the most severe winters. The velocity

increases with the slope, while the surface and central parts move faster than the bottom and sides. One celebrated glacier (Mer de Glace) moves down the sides of Mont Blanc, in summer and autumn, at the rate of 4 feet per day in some parts of its course, while in others it does not exceed 8 or 9 inches. The total number of glaciers in the Alps is estimated at 400, covering an area of 1440 square miles, and forming the sources of several of the largest rivers in Europe, as well as of their principal affluents. Thus, the Rhine and Rhone originate in glaciers of same name, on the opposite sides of Mont St Gothard; and many of the head-waters of the Rhine, Rhone, Po, and Danube find in the glaciers a never-failing supply of water. The principal region of the true glaciers extends from Mount Pelvoux, in Dauphiné, to the Gross Glockner, in the Rhætian Alps, east of which very few occur. Two groups of glaciers are particularly celebrated—one in the Pennine and the other in the Bernese Alps, or Oberland. The first is the *Group of Mont Blanc*, consisting of 34 enormous glaciers, some of which are 20 miles long by 2 broad. It includes the Mer de Glace, covering an area of 18 sq. m., one of the largest glaciers in the Alps, which forms the source of the river Arveiron, about 2 miles above the village Chamouni; and the Glacier de la Brenva, near Courmayeur, one of the most beautiful and most accessible of all known glaciers. The other is the *Group of the Oberland*, in the Bernese Alps, greatly more extensive than the former. It includes the great Aletsch Glacier, which has an area of 32 square miles, and which is fed by the snows of Mont Aletsch; and the Glacier of the Lower Aar, which has been described and repeatedly visited by the celebrated Swiss naturalist, Agassiz.

Avalanches are the most dangerous and terrible phenomena to which the Alpine valleys are exposed. They originate in the higher regions of the mountains, when the accumulation of snow becomes so great that the inclined plane on which the mass rests cannot any longer support it: it then rolls down the declivity by its own weight, acquiring, at every successive leap, both greater dimensions and increased speed, till, arriving at the lower valleys, it covers, destroys, or carries away everything that opposes its course—trees, forests, houses, rocks, and even entire villages.

Waterfalls.—Among the most celebrated waterfalls in Switzerland may be enumerated the following: *Fall of Lausen*, near Schaffhausen, on the Rhine: it has a total descent of 100 feet, and forms one of the most imposing phenomena of the kind in Europe. The *Staub-bach*, in the Lauterbrunnen, Canton Bern, on the White Lutchine, an affluent of the Aar. This is one of the highest falls in Europe, the river projecting itself over a precipice from 800 to 900 feet high. *Fall of Handek*, on the Aar, near the Grimsel glacier. *Fall of Giessbach*, also on the Aar, near Lake Brienz. *Fall of Reichenbach* (a tributary of the Aar), near Meyringen, in the Hasli Valley, and in the S.E. of Canton Bern. *Fall of Tosa*, on the river Toccia, in the Val Formazza, above Domodossola, noted for its great volume of water. *Fall of Sallenche*, on the Pissevach, an affluent of the Rhone, in Canton Valais, and 10 miles S.W. of Martigny.

Mineral Springs and Baths.—Switzerland contains upwards of 300 mineral springs, 18 bath establishments of the first, and 186 of the second class. Among the most frequented baths are those of Schinznach or Hapsburg on the Aar, and Baden on the Limmat, both in Canton Aargau; of Gurnighel, near Bern; of Leuk, in the Valais; of Lavez, in the Canton de Vaud; Pfeffers, in St Gall; St Moritz, in the Upper

Engadine; Grisons, &c. The first mentioned is chiefly frequented by French visitors: the great bath-house contains 160 baths, 360 beds, and saloons in which 500 persons can dine together: the temperature of the waters is about 60° Fahr. Those of Baden are sulphureous, have a temperature of 117° Fahr., and are chiefly frequented by the Swiss.

Places of Historical Interest.—There are many such in Switzerland, but the following are especially famous:—

Morgarten, on the boundary between Schwytz and Zug, where, on the 15th November 1315, 1300 Swiss defeated an army of 20,000 men, under Leopold of Austria, this being the first battle fought for Swiss independence. In 1798, the Swiss also defeated a French force in the same place. *Tell's Platte*, by the lake of Luzern, where William Tell, the Wallace of Switzerland, escaped from the tyrant Gessler. *Sempach*, on the lake of that name, in Canton Luzern, where, on the 9th July 1386, 1400 Swiss routed 4000 Austrians: the action is rendered memorable by the heroic death of Arnold von Winkelreid, and is celebrated by an annual festival. *Burglen*, in Uri, where Tell was born; and *Altorf*, in the same canton, where he is said to have shot the apple off his son's head. *Morat*, in Fribourg, where the Swiss totally defeated the invading army of Charles the Bold, Duke of Burgundy, 22d June 1476. *Laupen*, Canton Bern, where the Swiss, under Rudolf of Erlach, totally defeated the Austrians, 21st June 1339. *Fraubrunnen*, near Bern, where Enguerrand de Coucy, a French noble, with an army of adventurers, was defeated by the Bernese, in 1375. *Näfels*, where the Austrians, invading Glarus, were defeated, in 1388. *Wildhausen*, in St Gall, where Zwingle was born, in 1484; and *Cappel*, in Zurich, where he was killed in a skirmish against the Catholics, in 1531.

River-Basins.—Switzerland comprises portions of four great river-basins—those of the Rhine, Rhone, Po, and Danube. It is principally embraced, however, in the Rhine basin, which contains an area of 75,000 sq. m., and 21 out of the 25 capitals of Switzerland; while the Rhone basin (in all 37,900 sq. m.) contains only 3, and the Po basin 1 capital. For Tabular View of Rivers and Towns, see "River System of Central Europe," under "Austria," p. 261.

Lakes.—These are more numerous, in proportion to its size, than in any other European country, except Scandinavia and Finland. The two largest are the Lake of Geneva (area 221 sq. m., height above the sea, 1230 feet) and the Lake of Constance (183 sq. m., height above the sea, 1200 feet). They all belong to the same three river-basins as contain the 25 capitals: there are 10 in the basin of the Rhine, viz., *Lake Constance*, or *Boden See*, in the N.E., drained by the main river; *Thun* and *Brienz*, by the Aar; *Zurich* and *Wallenstadt*, by the Limmat; *Zug* and *Luzern*, by the Reuss; *Bienne*, *Neuchâtel*, and *Morat*, by the Thiele. The *Lake of Geneva* is drained by the Rhone; and *Maggiore* and *Lugano* by the Ticino, an affluent of the Po.

Climate.—Owing to the great elevation of the whole country, which is not less than 1300 feet, and the lofty ranges of mountains

which cover the greater part of the surface, the climate of Switzerland is considerably more severe than its geographical situation would indicate. Lying midway between the Pole and the Equator, and in the same latitude as the central parts of France, its climate is far more rigorous and variable, presenting in rapid succession the greatest extremes of temperature and the most violent contrasts of weather. In Geneva, at an elevation of 1230 feet above the sea, the thermometer ranges from 32°.9, the mean in winter, to 62°.95 in summer, while the mean annual temperature of the whole plateau is 4° lower than that of England. The mean pressure of the barometer at Geneva is 27 inches, and the annual fall of rain 29 inches; while on Mont St Bernard, which is 20 miles farther south, the thermometer ranges from 18° to 43° Fahr., the mean height of the barometer being 21 inches, and the fall of rain 65 inches. At elevations of from 1000 to 1600 feet, the climate is pure and healthy; but in the deep and narrow valleys it is usually insalubrious, and *goître*, or Derbyshire neck, as also *cretinism*, are very prevalent. The vine grows in the valleys, and extends to an elevation of 1900 feet; while oranges, olives, and pomegranates come to maturity in the three southern cantons.

Geology.—The Alpine region in the S. consists for the most part of crystalline rocks reposing on a granitic basis: a narrow belt of secondary strata extends N.E. from Martigny, on the Rhone, to Chur on the Rhine, in the line of the Bernese Alps; and another belt from Geneva to Basle, in the line of the Jura Mountains. The elevated plateau, between the Bernese Alps and the Jura Chain, consists of tertiary strata. Palæozoic rocks do not occur.

Minerals.—The mineral products are somewhat numerous, but not extensively wrought: iron, lead, zinc, tin, and copper combined with silver, are found in the Grisons, but the mines are now abandoned. Iron is worked with advantage in the Jura Mountains; coal in Zurich, St Gall, Aargau, and Basle; rock-salt in Vaud; saline and other mineral springs at Berg, and in numerous other localities, as also sulphur, asphalt, gypsum, marble, alabaster, and limestone.

Botany.—The indigenous vegetation is peculiarly rich and varied. The characteristic floras of all countries, from the Mediterranean to the North Pole, are here found arranged in successive belts on the sides of the mountains, as we ascend from the deep sheltered valleys to the snow-clad summits. The following zones of vegetation are easily marked—(1.) The vine-zone, in the valleys, ascending to an elevation of 1900 feet; (2.) Oak, 2600 feet; (3.) The zone of walnuts and chestnuts to 3000 feet; (4.) Beeches, 3200 feet; (5.) Birches, 4500 feet; (6.) Pine forests, spruce, larch, Scotch fir, and dwarf pine, 6000 feet; (7.) Rhododendra, 6500 feet; (8.) Alpine herbs, 7500 feet; (9.) Mosses and lichens, extending to the region of perennial snow, 8900 feet.

Agriculture is well conducted, but the corn raised is not nearly sufficient for home consumption, the deficiency being supplied by importation, and by the extensive use of potatoes and dairy produce. The principal source of wealth is the rich and excellent pastures, which in summer support

vast numbers of cattle, horses, sheep, and goats. Wheat, spelt, oats, barley, buckwheat, flax, hemp, and potatoes, are the principal crops. The vine is cultivated in the valleys; fruit-trees in the northern cantons; the orange, olive, and pomegranate on the Italian frontier.

Zoology.—The Swiss naturalist, M. Fatio, writing in 1869, gives the number of mammals inhabiting Switzerland as 58 species, including a new species of rodent (*mus Poschiavinus*), which feeds on tobacco. The animals have their various habitats in successive zones of elevation (like the plants) along the mountain-sides. The *arricola nivalis* and Alpine marmot live at a greater altitude than any other European mammal, being found among the oases of rock and herbage, which stand out amidst the vast masses of mountain ice. The falcon and common mouse are met with at an elevation of 11,000 feet; the ermine, 10,000; bear, chamois, steinbok, and frog, 9000; lynx, marten, stag, and golden eagle, 8000; wildcat, hare, mole, bat, and ringed snake, 7000; badger, common viper, newt, and blindworm, 6000; wolf, fox, weasel, fitchet, 5000; lizard, 4000; rabbit, 3000; beaver, 2000; and hamster, 1000.

Ethnography.—The Swiss belong to two distinct races—the Teutonic and the Celtic; the former in the N.E. Cantons, and the latter in the W. and S. The two races are to each other in the proportion of seven to ten—the Germans being the more numerous.

Language.—Four languages (embracing about 60 dialects) are spoken—viz., German in the N. and E., by about 1,843,000 of the population; French in the W., from the frontier to the river Sarine, in Fribourg, by 640,000; Italian in the S., along the Italian frontier oy 144,500; and Romanche in the Engadine, or valley of the Inn, in Grisons, by 42,500. *Religion:* The inhabitants of the table-land and of the N.W. cantons are nearly all Protestants, who number about 1,566,000. In the eastern and south-eastern cantons the Roman Catholics preponderate—numbering, in the whole Confederation, 1,085,000. The Protestant Church is Calvinistic in doctrine, and Presbyterian in form, but is greatly fettered by state control. *Education* is very widely diffused, especially in the Protestant cantons, where one-fifth of the whole population is constantly attending school; in the Catholic cantons, one-ninth. From the age of 6 to 12, education is compulsory. There are superior gymnasia in all the chief towns; while higher education is provided for by the three universities of Basle, Bern, and Zurich, by the academies of Geneva and Lausanne, and by the federal polytechnic school at Zurich. The university of Basle was founded in 1460. Among its most illustrious professors have been Erasmus, the Buxtorfs, De Wette, and Hagenbach. In regard to *National Character*, the Swiss are a hardy, active, industrious, and temperate people; brave, patriotic, and highly virtuous; but their excessive love of money leads many of them to hire themselves out as soldiers to any foreign power, without very carefully inquiring into the justice of the cause they advocate. In *Literature* their most eminent names are the following:—POETRY: Albert Haller, Solomon Gessner, Bodmer, Salis. HISTORY: Johann Müller, Sismondi. FINE ARTS: The Holbeins, Fontana, Bianchi, Borromini, Hofmann, and John Rudolph Huber, the Tintoretto of Switzerland. SCIENCE: Paracelsus, Euler, the Bernouillis, Haller, Zimmerman, Tissot, Saussure, Charles Bonnet, Pictet, Deluc, De

Candolle, Agassiz. THEOLOGY: Calvin, Beza, Zwingle, Vinet, D'Aubigné. MISCELLANEOUS: Jean Jacques Rousseau, Necker, Madame de Staël, Pestalozzi, Professor Soave, Abbé Fontana, Bonstetten, Dumont, Lavater, Burckhardt.

Government, &c.—The twenty-two Swiss cantons, each of which is an independent state (three of them, indeed—viz., Basle, Appenzell, and Unterwalden—forming 2 states each), constitute a federal republic, united in a perpetual league. This league dates back as far as the year 1307, and at first embraced only three cantons — Uri, Schwytz, and Unterwalden. Other cantons attached themselves at various times afterwards, and it was not until 1815 that the present number was completed. The Federal Assembly, which is composed of two divisions—a National Council, consisting of 128 representatives, being 1 deputy for every 20,000 inhabitants; and a Senate, composed of 44 members chosen by the 22 cantons, being 2 for each —holds its sittings at Bern; and that city is, in consequence, regarded as the federal capital.

Army and Finance.—By an article of the constitution of 1848, the maintenance of a standing army is forbidden; but for the defence of the country all capable of bearing arms are liable to be called out. In 1874, the regular army numbered 84,862 men; the reserve, 50,443; and the "landwehr," 64,243—total, 199,548. The receipts in 1870 amounted to £876,500; the expenditure to £1,236,000; and the public debt to £855,000.

Commerce and Manufactures.—The commerce of Switzerland is rather extensive, considering the inland character of the country and the immense mountain-barriers that surround it; but most of the lakes are navigable, and steamers are extensively employed. There are numerous mountain-passes leading from the interior to the southern cantons, and from these into Italy and the Tyrol, which for most part are available not only for beasts of burden but for wheeled carriages. The recent construction of several important lines of railway cannot fail to extend the commerce of the country to an extent hitherto unknown. Basle and Geneva are the entrepôts of the foreign trade; Bern, Zurich, and Lucern, of the internal commerce; while the transit trade, which is very important, is principally enjoyed by Basle, Soleure, Coire, Geneva, Bellinzona, and Lugano. The *Exports* consist principally of cattle, sheep, dairy produce, wine, timber, watches, musical-boxes, jewellery, ribbons, and silk stuffs. The *Imports* are mainly corn, raw cotton, and silk, fine cloth, iron and copper utensils, books, furniture, salt, salted fish, and articles of colonial produce—as tea, sugar, coffee, tobacco. Watches and jewellery are extensively manufactured in the W. cantons; linen in Bern; silks in Zurich and Basle; and cotton goods and embroidery in the N.E. cantons: printing is carried on in Neuchâtel, and printing and dyeing works at Glarus.

Internal Communication.—Several magnificent *roads* lead across the mountain-passes (see p. 274); steamers ply on all the principal lakes; the Aar is navigable from its mouth to Thun, but the Rhine and Rhone do not become navigable till after passing the frontiers of

Switzerland. There are several short *Canals*, one of which connects the Lake of Geneva with Lake Neuchâtel, and another the lakes of Zurich and Wallenstadt. *Railways* have made great progress within the last few years, the following being the principal lines:—That from Yverdun to Lausanne connects the lakes of Neuchâtel and Geneva; a second from Basle proceeds S. to Bern, and S.E. to Lucerne; a third joins this in the E. of Soleure, and proceeds eastward through Aarau, Zurich, and Frauenfeld, to Rheineck on Lake Constance, and thence S. to Pfeffers (in St Gall), Chur, and Bellinzona, with branches to Locarno and Lugano; a fourth connects Winterthur with St Gall, and another important line sets out from Geneva, skirts the lake to Villeneuve, and thence to Martigny, in Valais. In 1858, there were 310 miles of railway open for traffic; but, in 1870, there were 848 m.

ITALY.

Position and Boundaries.—Italy—the central and by far the most interesting of the three great peninsulas of Southern Europe—is bounded on the N. by the Alps, which separate it from the Tyrol and Switzerland; on the W., by France and the Mediterranean; on the S., by the Mediterranean and Ionian seas; and on the E., by the Strait of Otranto, the Adriatic, and Illyria.

Including Sicily, it is comprised between the parallels of 36° 42′ and 46° 42′ N., and the meridians of 6° 55′ and 18° 30′ E., and hence embraces 10° of lat. and 12° of lon. Rome, the ancient capital of Italy, situated almost exactly in the centre of this area (lat. 41° 54′, lon. 12° 59′ E.), is nearly on the same parallel of latitude as Oporto, Saragossa, Ajaccio, Scutari, Adrianople, Sinope, Tiflis, Khiva, Pekin, Great Salt Lake City, Iowa, and New York; and nearly on the same meridian as Copenhagen, Leipzig, Munich, Venice, Tripoli, and St Paul de Loando. The general outline bears a striking resemblance to that of a high-heeled boot, the toe of which approaches Sicily, while the heel is directed against Turkey. The extreme length of the peninsula, from the Alps to Cape Spartivento, is 750 miles; the average breadth is about 110 miles; but between Mont Blanc and the Isonzo it is 330 miles, while at the narrowest part, between Gaeta and Vasto, it is only 80 miles. The coast-line is estimated at 2174 miles; but, except in the S., the shores are but slightly indented. The N.E. coast is low and flat, especially around Venice. The western side of Tuscany and Campagna di Roma are also low and insalubrious, but the remainder of the coast is considerably more elevated.

Area and Population.—Including Lombardy and Venetia, recently acquired from Austria, but omitting Savoy and Nice, now ceded to France, the total area of the peninsula and islands amounts to 112,677 sq. m., or considerably less than the area of the British Isles; while, in 1872, the population was 26,801,000, or about nine-elevenths of that of the United Kingdom. In regard to density of population, the Kingdom of Italy ranks as the fourth state in

Europe, being only surpassed by Belgium, the Netherlands, and the United Kingdom. There are 237 persons to each sq. m., Lombardy, Venice, and what was recently known as the States of the Church, being the most populous, and the old Kingdom of Sardinia the least.

Political Divisions.—As the result of recent revolutions in Italy, out of the six independent states formerly existing in the peninsula —viz., Sardinia, Parma, Modena, Tuscany, Naples, and the Pontifical States—there is now only one state—the Kingdom of Italy, formed in 1861, whose sovereign is Victor Emmanuel, and which has Rome (and no longer Florence) for its capital. Parma, Modena, Tuscany, and part of the Papal States were annexed to Sardinia in 1859; Lombardy and Venetia in 1866; and the entire remainder of the Papal States in 1870. For administrative purposes the former seven monarchies—Sardinia, Parma, Modena, Tuscany, Naples, with parts of Austria, and the States of the Church—now embraced within that kingdom, were, in 1862, divided into 69 districts, named in general after their respective chief towns. These are grouped into 16 provinces, which, with their principal towns, are as follows:—

Piedmont and Liguria.*—Turin 213, Casale 25, Carmagnola 13, Saluzzo 16 (Po), Vigevano 18 (Ticino), Novara 27 (Terdoppio), Voghera 13 (Staffora), Alessandria 57, Asti 30 (Tanaro), Fossano 17, Coni 20 (Stura), Mondovi 11 (Pesio), Vercelli 25 (Sesia), Racconigi 11, Savigliano 17 (Maira), Pinerolo 16 (Clusone), San Remo 10, Genoa 130, Savona 11, Chiavari 10, Spezia 11 (G. of Genoa), Tortona 13, Novi 11 (Scrivio).

Towns bet. 5000 and 10,000 *inhabitants*—Valenza, Trino, Chivasso, Moncaglieri, Carignano, Villafranca, Cavorre, Barge, Trecate, Oleggio, *Marengo.*

* In pronouncing Italian proper names, the student will be aided by the following rules:—

a = *a* in English *far*, as in Mortara, Novaro.
e = *a* in *fate*, as in Crema; but when short it is = *e* in *met*, as in Vercelli.
i = *ee* in *meet*, as Messina, Pisa, Arpino (*Mes-see'na, Pee'za, Ar-pee'no*).
o has two sounds as in English—one long, as in Lodi, and the other short, as in Terdoppio.
u = *u* in *full*, as Lucca, Perugia, Pozzuoli (*Look'ka, Pe-roo'ja, Pot-soo-o'le*).
ai = *ai* in *aisle*, as Maira, Cairo (*Mi'ra, Ki'ro*).
au = *ow* in *now*, as in Ausa (*Ow'sa*).
ae makes two syllables, as in Gaeta (*Ga'e-ta*).
ie also makes two syllables, as Pienza, Piemonte, Trieste (*Pi-en'za, Pi-e-mon'te, Tri-est'* or *Tri-es'te*).
c and *cc* before *a*, *o*, *u* = *k*, as Casale, Monaco, Lucca; but before *e*, *i*, *y* = *ch* in *church*, as in Ticino, Piacenza, Lecce (*Ti-ches'no, Pi-a-chen'za, Let'che*).
ch = *ch* in *monarch*, as Secchia, Chiana, Chiente (*Sek'ki-a, Ki-ah'na, Ki-en'te*).
cia, cio, ciu = *cha, cho, chu* in English, as Pescia, Mincio (*Pes'cha, Min'cho*).
g before *a*, *o*, *u* = *g* in *gone*, as Gaeta, Borgo, Gubbio; but before *e*, *i*, *y* = *g* in *gentle*, as Genova, Girgenti (*Je-no'va, Jir-jen'te*).
gg before *e*, *i*, *y* = *dj*, as Reggio, Oleggio, Foggia (*Red'jo, Ol-ed'jo, Fod'ja*).
gh = *gh* in *ghost*, as Alghero, Voghera (*Al-ghe'ro, Vo-ghe'ra*).
gli = *lli* in *million*, as Paglione, Cagliari (*Pal-yo'ne, Cal-yah're*).
gn = *n* in *onion*, or *ñ* Spanish, or *gn* French, as Carmagnola, Bologna (*Car-man-yol'a, Bo-lon'ya*).
j = *y* in *yonder*, as Pistoja, Roja (*Pis-to'ya, Ro'ya*).
sc before *e*, *i* = *sh* in *shall*, as Sciacca, Brescia (*She-ac'ca, Bresh'sha*).
z = English *ds*, and *zz* = *ts*, as Spezia, Nizza (*Sped'zia, Nit'sa*).

Island Sardinia.—Cagliari 31 (S. coast), Sassari 25 (Turritano), Oristano 7 (Oristano).
Quarto, Bosa, Alghero, Ozieri, Sempio, Iglesias.

Lombardy.—Milan 200, Busto-Arsizio 10 n. (Olona), Viadana 14, Casal-Maggiore 15, Cremona 31, Codogno 10 n. (Po), Brescia 40 (Mella), Lodi 19, Como 18 (Adda), Bergamo 39 (Brembo), Monza 16 (Lambro), Pavia 30 (Ticino), Voghera 10 (Staffora).
Varese, Revere, Villafranca, Lonato, Salo, Pontevico, Soresina, Chiari, Treviglio, Lecco, Sondrio, Crema, Caravaggio, Borghetta, Binasco, Abbiate-Grasso.

Venetia.—Venice 129, Bassano 12 (Brenta), Adria 11 (Po), Gonzago 16 n. (Secchia), Mantua 30 (Mincio), Cavarzere 12, Legnago 10, Rovigo 36, Verona 67 (Adige), Esté 11 (Agno), Chioggia 27, Padua 66, Vicenza 23 (Bacchiglione), Treviso 18 (Sile), Belluno 14 (Piave), Udine 23 (Roja).
Mestre, Cittadella, Lendinara Tiene, Schio, Conegliano, Feltre, Serravalla.

Emilia.—Parma 46 (Parma), Ferrara 68, Guastalla 10, Piacenza 40 (Po), Pontremoli 11 (Magra), Modena 32 (Secchia), Finale 12 (Panaro), Reggio 30 (Crostolo), Carrara 6 (Avenza), Massa 15 (Frigido), Bologna 116 (Reno), Imola 11 (Santerno), Faenza 30 (Lamone), Ravenna 50, Forli 38 (Montone), Rimini 33 (Ausa).
Comacchio, Cervia, Lugo, Borgo, San Donino-Mirandola.

Umbria and the Marches.—Pesaro 11 (Foglia), Ancona 46, Sinigaglia 11, Fano 20 (Adriatic), Jesi 19, Fabriano 17 (Esino), Osimo 16 (Musone), Recanati 19, Macerata 19 (Potenza), Tolentino 11, Camerino 12 (Chienti), Fermo 18 (Fermo), Ascoli 11 (Tronto): Perugia 44 (Tiber), Terni 15 (Nera), Rieti 14 (Velino), Spoleto 7 (Marogia).
Urbino, Loreto, Orvieto, Gubbio, Foligno.

Tuscany.—Florence 167, Empoli 16, Pisa 51 (Arno), Volterra 13 (Era) Peschia 12 (Nievoli), Pistoja 22 (Ombrone), Prato 12 (Bisenzio), Arezzo 37, Montepulciano 12 n. (Chiana), Lucca 65 (Serchio), Leghorn 97 (W. coast), Siena 25 (Arbia).
Montevarchi, Poppi, Vinci, Colle, Cortona, Castel-Fiorentino, Porto-Ferrajo, Grosseto.

Latium.—Rome 244 (Tiber), Viterbo 14 (Arcone), Civita Vecchia 10 (W. coast), Velletri 13 (Astura), Alatri 11 n. (Cossa).
Frosinone, Tivoli, Corneto, Bolsena, Astura, Albano, Terracina, Anagni, Palestrina, Pontecorvo.

Campania.—Naples 447, Portici 12, Giugliano 11, Afragola 16 n., Pozzuoli 15, Torre del Annunziata 15, Castellamare 20, Resina 12 (Bay of Naples), Gaeta 15 (G. of Gaeta), Teano 12, Arpino 12 n., Sora 12 (Garigliano), Capua 8 (Volturno), Benevento 20, Ariano 13 n. (Calore), Avellino 21 (Sabbato), Caserta 28 n., Maddaloni 18 n., Aversa 16 n., Acerra 12, Nola 12 (Lagni), Sarno 15 n. (Sarno), Salerno 21 (G. of Salerno).
Fondi, Sorrento, Nocera, Amalfi, Baccino, Sala, Policastro, Troja, Bovino.

Calabria and Basilicata.—Reggio 30 (Str. Messina), Catanzaro 13, Rossano 14 (E. co.), Cosenza 13 (Crati), Potenza 9 (Basente), Matera 14, (Gravina).
Marsico, Oppido, Paola, Pizzo, Palmi, Scylla, Cotrone, Cassano, Castrovillari.

Apulia.—Altamura 17, Gravina 14 (Gravina), Taranto 27 (G. of Taranto), Lecce 15, Brindisi 10, Francavilla 17 n., Gioja 17 n., Ostuni 16, Mola 12, Bari 50, Bitonto 22, Molfetta 22, Trani 22, Corato 25, Andria 30, Terlizzi 18, Barletta 27 (E. coast), Cerignola 17, Minervino 14 n.,

Melfi 10 (Ofanto), Foggia 34, Lucera 15 (Salsola), San Severo 17 (Radicosa).

Gallipoli, Nardo, Manfredonia, Viesti.

Abruzzo and Molise.—Campobasso 14, Vasto 12, Lanciano 18 n., Ortona 13 (Adriatic), Chieti 16, Sulmona 13 n., Aquila 10 n. (Pescara), Teramo 10 (Trontino).

Island of Sicily.—Palermo 220, Termini 26, Cefalu 11, Mistrella 11, Milazzo 10, Partinico 19, Alcamo 19 n., Monreale 12 n. (N. coast), Trapani 30, Marsala 31, Castelvetrano 15 (W. coast), Sciacca 14, Girgenti 20 n., Alicata 13, Terranova 14, Scicli 10 (S. coast), Nota 13, Syracuse 14, Agosta 14, Catania 84, Acireale 35, Messina 112 (E. coast), Corleone 15 (Belici), Naro 10, Canicatti 20 (Naro), Caltanisetta 16 n., Castrogiovanni 14 (Salso), Mazzarino 11, Piazza 20, Caltagirone 22 n. (Terranova), Vittoria 15, Comiso 16 (Comiso), Ragusa 22 (Ragusa), Modica 30 (Scicli), Paterno 14, Nicosia 14 (Giaretta), Lipari 14 (I. Lipari).

San Marino.—SAN MARINO 5 (Ausa, above Rimini).

Descriptive Notes.—The Kingdom of Italy, after its absorption of the Papal Territory, contains ten cities of more than 100,000 inhabitants (Naples, Rome, Turin, Milan, Palermo, Genoa, Florence, Bologna, Venice, and Messina); twelve cities ranging between 100,000 and 50,000 (Leghorn, Catania, Ferrara, Verona, Alessandria, Ravenna, Modena, Padua, Pisa, Reggio, Lucca, and Parma); sixty-five cities with less than 50,000, but above 20,000; while there are about one hundred and forty with between 20,000 and 10,000 inhabitants.

Turin (*anc.* Augusta Taurinorum, *Ital.* Torino), capital of Piedmont, ranks as the first city in Italy for the number and importance of its literary institutions, amongst which the university occupies the first place. It was an important place even in the time of Hannibal, who destroyed it; but Augustus made it a Roman colony. Near Turin, on the S.W., are the three valleys which in the middle ages formed the home of the Waldenses, the early pioneers of the reformed religion. **Casale**, once the capital of the celebrated Marquises of Montferrat, has an important manufactory of silk twist. **Vigevano**, occupied with the manufacture of silk stuffs, hats, soap, and macaroni. **Alessandria**, a large fortified town on the Tanaro, with extensive trade and two annual fairs. **Asti**, celebrated in the middle ages for its industry and commerce; the birthplace of Alfieri, the dramatist, in 1749. The country around abounds in mineral springs, and produces the best wines in Piedmont. **Vercelli** contains a valuable library of old MSS., including a copy of the laws of the Lombards, and a MS. of the Gospels, written by Eusebius in the fourth century: it carries on a large trade in rice, which is raised in the vicinity. **Racconigi** and **Savigliano**, with important manufactures of silk, linen, and woollen fabrics. **Pinerolo**, a trading and manufacturing town at the foot of the Alps. **Marengo**, memorable for the decisive victory of the French over the Austrians, 14th June 1800. **Genoa** (*Ital.* Genova, *anc.* Genua), a celebrated and ancient city, originally the chief town of the Ligurians, did not rise to any historical importance until the period of the middle ages. From the 11th to the 18th century it was the capital of a commercial republic, which planted numerous colonies in the Levant and on the shores of the Black Sea. It was taken by the French in 1797, and ceded to Sardinia in 1815. It is a flourishing seaport, the

seat of a university, and of extensive trade: was the birthplace of Columbus, in 1435. **Novi**: here the French were defeated by the Austro-Russian army in 1799. **Cagliari** (*anc.* Caralis), originally a Carthaginian colony, and the capital of the island Sardinia under the Romans, is a fortified maritime city, the residence of a viceroy, and the seat of a university. **Sassari**, the most important place in the island except Cagliari, has a university, museum, and public library, and a trade in tobacco and fruits. **Milan** (*Ital.* Milano, *anc.* Mediolanum), formerly capital of the Lombardo-Venetian kingdom, an ancient, populous, and magnificent city on the left bank of the Olona; adorned by numerous elegant public buildings, is of a circular shape, enclosed on three sides by a wall surrounded by broad ramparts nearly eight miles in circumference. From its position on the great line of railway leading from Venice to Turin, and on the principal route across the Alps, it is favourably situated for trade. Milan was the ancient capital of the Insubres, who founded it, B.C. 400; was taken by the Romans, B.C. 222; was inhabited and embellished by many of the Roman emperors. On the division of the empire under Diocletian it became one of the capitals, and continued to be the residence of the Emperors of the West till the invasion of the Huns, who took and plundered it. The poet Virgil studied at Milan; it was the see of St Ambrose, and the birthplace of many popes and eminent men; was capital of a republic in 1056; in the end of the 14th century was made the capital of the Duchy of Milan; passed successively under the dominion of Spain, Austria, and France; in 1805 became capital of the Kingdom of Italy; was restored to Austria in 1815; was taken by the French and Sardinian army in 1859, and ceded to Sardinia by the treaty of Villafranca in the same year. **Cremona**, a fortified city on the Po, long famous for its violins. **Brescia**, an important commercial and manufacturing city, noted for its fine wines, cutlery, and firearms. **Lodi**, celebrated for the decisive victory obtained by Napoleon I. over the Austrians in 1796. **Como**, at the S.W. extremity of the beautiful lake of same name, has extensive manufactures of cloth and silk, and is the birthplace of the Younger Pliny. **Bergamo**, a fortified city, with numerous manufactures, and a great annual fair, at which the sales sometimes amount to £1,200,000. **Monza**: here are kept the regalia and iron crown of Lombardy. **Pavia** (Ticinum, and afterwards Papia) is a place of historical interest; has a university, founded by Charlemagne, in which Spallanzani and Volta were professors. **Venice** (*Ital.* Venezia, *anc.* Venetia), a famous city of Italy, built on piles in the centre of a large lagoon, was for many centuries the capital of a celebrated republic, which dates its origin from the invasion of Attila in 452, and which attained its acme of prosperity in the 15th century, when it was reckoned the first maritime and commercial power in the world. It began to decline in the 16th century, and its overthrow was completed by Napoleon in 1797; it was made over to Austria in 1814, and now forms the capital of the province Venetia. It is the birthplace of Canova, one of the greatest of modern sculptors; and Titian, the prince of portrait-painters, was born in its vicinity. **Bassano**: here the French defeated the Austrians in 1796. **Adria**, an ancient seaport town, which gave its name to the Adriatic, is now fourteen miles inland, and in the centre of the delta of the Po: contains many remains of splendid edifices. **Mantua**, a strong fortress on the Mincio; the poet Virgil was born in its vicinity. **Verona**, a large, strongly-fortified city on the Adige, of great historical interest, and containing numerous Roman remains, especially an amphitheatre, the most perfect of its kind now existing; renowned for its dye-

works and silk-mills; and the birthplace of Cornelius Nepos, Catullus, the elder Pliny, Paul Veronese, and several other eminent men. **Chioggia**, on an island in the Venetian lagoon, is a fortified seaport town of considerable commercial importance. **Padua**, a celebrated and strongly fortified city on the Bacchiglione, with a university once very famous and attended by 1800 students, among whom were Tasso and Columbus. It is the birthplace of Livy the historian, and Belzoni the traveller. **Vicenza**, an important manufacturing city, extensively engaged in the silk trade; birthplace of Palladio. **Treviso** and **Udine** have numerous manufactures of silk, cotton, linen, and paper. **Parma**, formerly cap. of duchy of same name, has some silk manufactures and a fine picture-gallery. **Piacenza** (*anc.* Placentia) was founded by the Romans, B.C. 219, as a protection against the recently-subdued Gauls. It is a well-built and handsome city, adorned with many fine works of art. Here Hannibal defeated the Romans, B.C. 219; it is the birthplace of Pope Gregory X., Cardinal Alberone, Pallavioini, and Laurentius Valla. **Modena** (*anc.* Mutina), of Celtic origin, and the first place which the Romans took from the Boii, was formerly cap. of duchy of same name; contains a university, botanic garden, and rich cabinets of natural history. **Reggio**, a fortified city on the Crostolo, the birthplace of Ariosto in 1474, and of Correggio, the painter, in 1494. **Carrara** and **Massa** have famous quarries of statuary marble. **Florence** (*anc.* Florentia, *Ital.* Firinze), formerly cap. of the Grand Duchy of Tuscany, and then of the Kingdom of Italy, is a walled city on the Arno, surrounded by most delightful scenery, and adorned by many magnificent works of art. The Florentine Gallery contains the richest collections of paintings, sculpture, and antiquities in the world; also a university, and numerous scientific and educational establishments; various manufactures of silk, carpets, straw-hats, mosaic work, porcelain, and jewellery; birthplace of Dante, Leonardo da Vinci, Boccaccio, Machiavelli, Amerigo Vespucci, Vannuchi, Cellini, and Pope Leo. X. **Pisa**, an ancient decayed city on the Arno, containing many noble edifices built of marble—a fine cathedral—a famous leaning tower, 178 feet in height, the topmost story of which overhangs the base about 13 feet—an ancient university, which is still the great centre of education in Tuscany. Pisa was one of the twelve cities of ancient Etruria: from the 10th to the 14th century it was the capital of an enterprising republic; and here Galileo was born in 1564. **Volterra**, with numerous Etruscan antiquities: in the vicinity are singular borax lagoons, rich copper-mines, brine-springs, salt-works, and quarries of alabaster, from which beautiful vases are largely exported. **Pistoja** claims the invention and first manufacture of pistols; and continues to construct firearms, cutlery, and surgical instruments. **Prato**: numerous manufactures and copper-works for smelting the copper found in its vicinity. **Arezzo** (*anc.* Arretium), one of the twelve Etruscan cities; birthplace of Mecænas, Petrarch, Michael Angelo, Vasari, Guido, and Redi. **Lucca**, originally a Ligurian town, has an ancient amphitheatre in a tolerable state of preservation, and of great size; a cathedral containing many valuable paintings; manufactures of silk, woollen stuffs, and paper, and famed for its mineral baths. **Leghorn** (*Ital.* Livorno), originally one of the twelve independent Etruscan towns, remained a place of importance till the fall of the Western Empire, and still contains many interesting remains of antiquity: it is the principal seaport of Tuscany; is noted for the manufacture of Tuscan straw-plait, woollen caps, glass, and paper; it ranks as the greatest commercial emporium in Italy, and embraces all the foreign trade of Tuscany; contains

the remains of Smollett the novelist. **Siena** was the capital of a powerful republic in the middle ages, when it contained 100,000 inhabitants; several magnificent public edifices adorned with paintings of the Siennese school, and contains a university. The mountains in the vicinity contain rich marble quarries. **Ferrara** (Forum Allieni), capital of a delegation, and the most northern city of the Papal States, on an arm of the Po; is fortified and garrisoned by Austrian troops. It is the seat of a famous university, at which Ariosto was educated; contains a public library of 80,000 volumes, besides numerous MSS., including some of Ariosto and Tasso; and was for a time the asylum of Calvin, Marot, and other reformers. **Bologna** (Bononia), once the capital of the Etruscans, and now of a legation. In regard to population, it is the second city of the Papal States; is the seat of a famous university, which, in 1841, had 560 students; the birthplace of Galvani, Aldrovandi, Malpighi, the painters Guido, Albano, Domenichino, and the three Caracci. **Faenza** (Faventia), long celebrated for its earthenware, and supposed to have been the first Italian city where the manufacture of that article was introduced. It was the birthplace of Torricelli, the inventor of the barometer. **Ravenna**, a very ancient town, founded by the Pelasgi; the residence of the emperors when Italy was threatened by the barbarians, and one of the principal stations of the fleet. It is rich in antiquities of the early middle ages. **Forli** (Forum Livii), the seat of a university, and of a cardinal legate; possesses considerable trade and manufactures. **Rimini** (Ariminum), originally an Umbrian town, was colonised by the Romans, B.C. 268; became the seat of a great ecclesiastical council, A.D. 359; and has important sulphur-mines in the vicinity. **Ancona**, capital of a delegation, and a fortified seaport, which is one of the best frequented in Italy. **Loreto** owes its origin to a famous chapel of the Virgin, over which a magnificent church has been built. **Urbino** (Urbinum Hortense), capital of delegation Urbino e Pesaro; contains a ducal palace, a cathedral, a college, and a manufactory of pins, and was the birthplace of Raphael in 1483. **Perugia** (*anc.* Perusia) was one of the twelve Etruscan cities: under the empire it was the most important city of Etruria, and long defied the power of the Goths. Some of the most interesting Etruscan antiquities have been found here. It is now the capital of a delegation, and only noted for its two great annual fairs. **Terni**, noted for the magnificent waterfalls in the vicinity, unrivalled in Europe, though of artificial origin. **Rieti** (*anc.* Reate), situated in a lovely valley, which is said to rival in beauty the Thessalian Tempe. **Gubbio** (*anc.* Iguvium): here were discovered, in 1444, in the ruins of the temple of Jupiter, seven bronze tables with Umbrian inscriptions, forming most interesting remains of that language; they are known as the Eugubian Tables, and are still preserved at Gubbio. **Naples**, formerly capital of the kingdom of the Two Sicilies, beautifully situated on the bay of same name, is by far the most populous city in Italy. It is very ancient, having been founded about four centuries before the Christian era. It is the principal seaport of southern Italy, and the centre of its learned institutions. In its vicinity are the celebrated ruins of Pompeii and Herculaneum, which were buried during an eruption of Mount Vesuvius (A.D. 79), and accidentally discovered in 1720, since which time the excavations have brought to light many of the most valuable relics of antiquity. **Castellamare**: here the elder Pliny perished in the catastrophe which buried Pompeii, A.D. 79. **Gaeta**, a fortified seaport town, which formed the asylum of Pius IX., when, in 1849, he fled from Rome, to join the fugitive King of Naples. **Capua** is strongly fortified, and is the only fortress that covers the approach to

Naples. **Benevento** was the seat of several councils in the eleventh and twelfth centuries. **Avellino**: near it the Val di Gargano, famous for the victory of the Samnites over the Romans, in the year of Rome 433. **Salerno**, noted for its ancient school of medicine, contains a university. **Reggio**, opposite Messina, is the most southern city and seaport of continental Italy, and very ancient. It was touched at by St Paul on his voyage to Rome. **Taranto**, an ancient city of great historic celebrity, but now a place of little importance. **Barletta**, a fortified seaport town, carrying on a brisk coasting trade. **Foggia** is considered the second city in Naples for wealth and importance. **Aquila**, birthplace of Sallust, is one of the most commercial cities in the kingdom of Naples. **Palermo**, capital of Sicily, and the fourth city in Italy as regards population, is of very ancient origin, having been founded by the Phœnicians. It is a spacious and well-built city, with extensive commerce. It was the scene of the massacre called the "Sicilian Vespers" (in 1282), which, commencing in the freak of a Frenchman who had insulted a Sicilian lady going to church, ended in the extermination of every Frenchman in the island. **Trapani**, a busy commercial town engaged in the coral fishery. **Marsala**, noted for its wines, which it largely exports to England. **Girgenti**, a very ancient and celebrated city, is the chief port in Sicily for the exportation of sulphur. **Syracuse**, founded by Corinthian colonists, B.C. 734, was for ages a place of great historic importance: it was the birthplace of Archimedes, and the residence of Plato and Cicero, but has now dwindled into insignificence. **Catania**, at the foot of Mount Etna, and the third most important city in Sicily, has been repeatedly ruined by earthquakes: the houses are built and the streets paved with lava: it has manufactures of silk, and wares made of lava and amber, and exports corn, macaroni, olives, figs, raw silk, wine, and snow from Mount Etna. **Messina**, the most populous city in Sicily, except the capital, which it equals in commercial importance. The harbour is regarded as one of the finest in Europe, and is well fortified. The Strait of Messina, with a rock named Scylla on the one side, and an eddy called Charybdis on the other, was much dreaded by ancient mariners. **Lipari**, in an island of same name, exports pumice-stone to all parts of the world, as also sulphur, nitre, and soda. **Rome**, on left bank of the Tiber, cap. of the Kingdom of Italy, is, next to Jerusalem, the most celebrated city in the world. It was founded B.C. 753; at the beginning of our era it had upwards of 1,000,000 inhabitants, and was the mistress of the then known world; in A.D. 410 it was conquered by the Goths under Alaric; it was given to the popes by Pepin and Charlemagne in the eighth century, since which time it has been the capital of the Pontifical States. Rome is unrivalled for its artistic and architectural riches, but has a sad and desolate appearance. The streets are narrow, dirty, and unpaved, the finest palaces and the most wretched hovels being in closest juxtaposition. The Cathedral of St Peter's is the largest and most sumptuous structure of the kind in the world, and the Vatican Palace adjoining is the permanent residence of the popes. The university, which dates from 1244, is well attended, but is less celebrated than the college of the Propaganda, in which natives of all parts of Europe are trained as missionaries for propagating the "Catholic" faith throughout the world. **Civita Vecchia**, the principal seaport of the Pontifical States. **Velletri**, the birthplace of the Emperor Augustus, B.C. 63. **San Marino**, the capital of one of the smallest and most ancient states in Europe, which has an area of only 24 square miles, and a population of 7303 inhabitants, who are chiefly occupied in rural industry and silk-manufactures.

Capes and Islands.—Piombino and Argentaro, in Tuscany; Circello, S. of Latium; Palinuro and Vaticano, W. of Campania, Spartivento, Nau or Colonna, and Leuca, S. of Calabria; Otranto and Gargano, in the Adriatic; Passaro, San Vito, and Ras Culmo, in Sicily; Teulada and Carbonara, S. of Island of Sardinia. The Italian islands are arranged into four groups or clusters—viz., the Sardo-Corsican, Sicilian, Maltese, and Ponza groups.

The Sardo-Corsican Islands, separated from the mainland by the Tyrrhenian Sea, are chiefly Sardinia (the second largest island in the Mediterranean; area, 9167 sq. m.; pop. 588,064); Corsica, which belongs to France; and Elba. *The Sicilian Group*, which nearly connects the Italian peninsula with the African coast, consisting principally of Sicily (the largest island in the Mediterranean; area, 11,290 sq. m.; population, 2,392,414); the Lipari Islands (Stromboli, Lipari, Vulcano, &c.), Ustica, Favignana, and Pantellaria. *The Maltese Group*, belonging to Great Britain, and consisting of Malta (area, 98 sq. m.; pop. 134,055); Gozo, and Comino. *The Ponza Group*, W. of Naples, chiefly Ponza, Ischia, and Capri.

Seas, Gulfs, and Straits (all forming parts of the Mediterranean). the Tyrrhenian Sea, between Italy and the Sardo-Corsican Islands; Ionian Sea, between Italy and Greece; Adriatic, between the Italian and Hellenic peninsulas. Gulfs of Genoa, Gaeta, Naples, Salerno, Policastro, and St Eufemia, on the W. side; of Squillace and Taranto on the S.; and of Manfredonia and Venice in the Adriatic. Str. of Messina, between Calabria and Sicily; Bonifacio, between the islands Corsica and Sardinia; Otranto, between Apulia and Turkey.

Surface and Mountains.—Italy embraces three great natural divisions—viz., *first*, the great plain of Lombardy in the north, between the Alps and the Apennines, sloping towards the Adriatic, watered by the Po, Adige, and other streams, and extremely fertile; *second*, the long, narrow peninsular portion, projecting into the Mediterranean in a south-easterly direction, and having the long mountain-chain of the Apennines as its back-bone; and, *third*, Sicily, Corsica, and Sardinia, or the insular portion. Corresponding to these, there are, in like manner, three great mountain-ranges; the first of which (the Alps) separates Italy from the rest of the continent; the second (the Apennines) traverses the mainland in the direction of its greatest length, and extends to the farthest extremity of Sicily; while the third stretches from N. to S. through the Sardo-Corsican islands. The Alps have been already described under "Europe," as also under France, Switzerland, and Austria.

The *Apennines* branch off from the Maritime Alps near Genoa, extend in a S.E. direction through the entire length of the peninsula, and form the water-parting between the Tyrrhenian Sea and the Adriatic. They are of greatly less elevation than the Alps, and nowhere attain the height of the snow-line, except in Sicily, though some of the continental summits are covered with snow for nine months in the year. *Monte Corno*, in the N. of Naples, the highest summit of the continental Apennines, 9521 feet; *Monte Velino*, in N.W. of Naples, 8180 feet; *M. Vesuvius*,

near Naples, 3948 feet; *M. Etna* in Sicily, the highest summit of the entire range, 10,874 feet: line of perennial snow, in Sicily, 9500 feet.

The *Sardo-Corsican* range extends from Cape Corso, in the N. of Corsica, to Cape Spartivento in the S. of Sardinia, and forms the water-parting between the Tyrrhenian Sea and the Mediterranean proper: highest summits, *Monte Rotondo*, in Corsica, 9068 feet, and *Monte Genargentu*, in Sardinia, 7000 feet.

Mountain-Passes.—The most frequented of these are the following:—*Col di Tende*, in the Maritime Alps, 5890 feet above the level of the sea, and leading from Coni to Nice. *Pass of Mont Genèvre*, in the Cottian Alps, 6560 feet, from Susa to Briançon. *Pass of Mont Cenis*, from Susa to S. Jean de Maurienne, in Savoy, 6775 feet. *Pass of Great St Bernard*, 8150 feet, between Piedmont and the Valais. *Simplon Pass*, 6592 feet, from Milan and Domodossola to Canton Valais. For the remaining passes across the Alps, see under "Switzerland" and "Austria."

River-Basins.—Owing to the peninsular character of the country and the position of the mountain-chains, there is only one extensive river-basin in all Italy—viz., that of the Po, which is limited by the Alps on the one side and the Northern Apennines on the other, and embraces (if we include the rivers which flow into its delta) an area of 34,600 sq. m.

Table of Rivers and Towns.—In the following table will be found all the principal rivers and affluents of rivers of the Italian peninsula, beginning at the G. of Genoa and ending at the G. of Trieste, together with all the towns containing 5000 inhabitants and upwards situated on their banks:—

Basins inclined to the Tyrrhenian Sea.

Rivers.	*Towns.*
G. of Genoa,	San Remo, *Porto Maurizio*, *Oneglia*, Savona, Genoa, Chiavari, Spezzia, *Lerici*.
Magra,	Pontremoli.
Avenza,	Carrara.
Frigido,	Massa-di-Carrara.
Serchio,	Lucca.
Arno,	Pisa, Empoli, FLORENCE, *Signa*, *Montevarchi*, *Poppi*, *Vinci*.
Era, *l*	Volterra.
Nievoli,	Peschia.
Elsa, *l*	*Colle*.
Ombrone,	Pistoja.
Bisenzio,	Prato.
Chiana, *l*	Arezzo, Montepulciano, n.
Co. of Tuscany,	Leghorn.
Ombrone Senese,	*Grosseto*.
Arbia,	Siena.
Marta,	*Corneto*, *Bolsena*.
Arcone, *l*	Viterbo.
Co. Pontifical States,	Civita Vecchia.
Tiber,	ROME, Perugia.
Teverone, *l*	*Tivoli*.
Nera, *l*	Terni,
Velino, *l*	Rieti.
Paglia,	*Orvieto*.
Topia, *l*	*Foligno*.
Chiasco,	*Gubbio*, n.
Marogia, *l*	Spoleto.
Astura,	Velletri, *Albano*, n.
Amasena,	*Terracina*.
G. of Gaeta,	*Fondi*, n., Gaeta.
Garigliano,	*Ponte Corvo*, Arpino, n., Sora.
Sacco,	*Anagni*, n, *Palestrina*.
Cossa, *l*	*Frosinone*, Alatri, n.
Savone,	Teano.
Volturno,	Capua, *Isernia*, n.
Calore, *l*	Benevento, Ariano, n.
Sabbato, *l*	Avellino.
Lagni,	Caserta, n., Maddaloni, n., Aversa, n., Acerra, Nola.
G. of Naples,	Pozzuoli, Afragola, n., Fratta Maggiore, Giugliano, NAPLES, Portici, Torre del Annunziata, Castellamare, *Sorrento; Ruins of Herculaneum and Pompeii*, Resina.

Basins inclined to the Tyrrhenian Sea (continued).

Rivers.	*Towns.*
Sarno,	*Nocera*, Sarno, n.
G. of Salerno,	*Amalfi*, *Salerno*; *Ruins of Pæstum.*
Sele,	*Buccino*, *Sala.*
G. of Policastro,	*Policastro.*
West Co. Calabria,	Nicastro, n., *Pizzo*, *Paola*, *Palmi.*
St. of Messina,	*Scylla*, Reggio.

Basins inclined to the Ionian Sea.

East Co. Calabria,	Catanzaro, *Cotrone*, Rossano.
Crati,	Cosenza.
Sibari, *l.*	*Cassano*, *Castro-Villari.*
G. of Taranto,	Taranto, *Nardo*, *Gallipoli.*
Agri,	*Marsico.*
Basente,	*Potenza.*
Bradano,	Matera, n., *Oppida.*
Gravina,	Altamura, n., Gravina.

Basins inclined to the Adriatic.

East Co. Otranto,	Lecce, n., *Brindisi*, Francavilla, Ostuni.
Co. of Bari,	Mola, Gioja, n., Bari, Bitonto, Molfetta, Trani, Corato, n., Andria, n., Terlizzi, Barletta.
G. of Manfredonia,	*Manfredonia*, *Viesti.*
Ofanto,	Cerignola, n., Minervino, n., Melfi.
Cervaro,	*Bovino*, *Troja*, n.
Cesone,	Foggia.
Salsola, *l.*	Lucera.
Radicosa,	San Severo.
Biferno,	Campo-Basso.
Sangro,	*Atessa.*
Co. Abruzzo,	Vasto, Lanciano, n., Ortona.
Pescara,	Chieti, Sulmona, Aquila.
Piomba,	*S. Angelo.*
Trontino,	Teramo.
Tronto,	Ascoli.
Fermo,	Fermo.
Chienti,	Tolentino, Camerino.
Potenza,	Recanati, Macerata.
Musone,	*Loreto*, Osimo.
E. Co. Marches,	Ancona.
Esino,	Jesi, Fabriano.
Misa,	Sinigaglia.
Metauro,	Fano, *Urbino*, n.
Foglia,	Pesaro.
Ausa,	Rimini, SAN MARINO.
Savio,	*Cervia*, n.
Montone,	Ravenna, Forli.
Lamone,	Faenza.
Santerno,	*Comacchio*, Imola.
Reno,	Bologna.
Po,	Adria, Ferrara, *Revere*, Guastalla, Viadana, *Sabionetta*, n., Casal-Maggiore, Cremona, Codogno, Piacenza, Pavia, *Valenza*, Casale, *Trino*, *Crescentino*, *Chivasso*, TURIN, *Moncaglieri*, *Carignano*, Carmagnola, *Villafranca*, *Cavarre*, n., Saluzzo, n., *Barge*
Panaro,	Finale.
Secchia,	Gonzago, MODENA.
Mincio, *l* (L. Garda),	Mantua, *Villafranca*, *Lonato*, *Salo.*
Oglio, *l* (L. Iseo),	*Pontevico*, *Soresina*, *Chiari.*
Mella, *l*	Brescia.
Crostolo,	*Guastalla*, Reggio.
Parma,	PARMA.
Taro,	Borgo-San-Donino, n.
Adda, *l* (L. Como),	Lodi, *Treviglio*, n., *Lecco*, Como, *Sondrio.*
Serio, *l*	*Crema*, *Caravaggio.*
Brembo, *l*	Bergamo, n.
Lambro, *l*	*Rhorgetto*, MONZA.
Olona, *l*	MILAN, Busto-Arsizio, n., *Varese.*
Ticino, *l* (L. Maggiore),	Pavia, *Binasco*, n., Vigevano, *Abbiate-Grasso*, n., *Trecate*, *Intra*, *Locarno*, BELLINZONA.
Toccia,	*Domodossola.*
Tressa, *l* (L. Lugano),	*Lugano.*
Terdoppio, *l*	Novara, *Oleggio.*
Staffora,	Voghera.
Gogna, *l*	*Mortara*, n., *Borgo-Manero.*
Scrivio,	Tortona, Novi.
Tanaro,	*Marengo*, Alessandria, *San-Salvatore*, Asti, *Alba*, Bra, Cherasco, *Bene*, n., *Garessio.*
Bormida,	*Acqui.*
Orbe,	*Castellazzo*, *Gavi*, *Ovada.*
Belbo,	*Nizza-Monferrato.*
Stura, *l*	Fossano, Coni.
Pesio, *l*	Mondovi, n., *Chiusa.*
Sesia, *l*	Vercelli.
Cervo,	*Biella.*
Dora-Baltea, *l*	*Caluso*, *Ivrea*, *Aosta.*
Orca, *l*	*Chivasso*, *Locana.*

Basins inclined to the Adriatic—(continued).

Rivers.	*Towns.*
Dora-Riparia, *l*	TURIN, *Rivoli.*
Sangone, *l* ..	*Giaveno.*
Maira, ...	*Somnariva*, Raconigi, Savigliano, *Busca.*
Clusone, *l* ..	Pinerolo.
Adige, ...	Cavarzere, Rovigo, *Lendinara*, Legnago, Verona, *Roveredo*, Trient or Trent, *Meran*, *Glurns.*
Agno, *l*	Este.
Eisach, ...	Botzen, *Brixen.*
Bacchiglione,	Chioggia, Padua, Vicenza. *Tiene, Schio.*
Brenta, ...	VENICE, n., *Mestre, Cittadella*, n., Bassano.
Sile, ...	Treviso.
Piave, ...	*Conegliano*, n., *Feltre*, Belluno.
Meschio, *l* ..	*Serravalla.*
Tagliamento,	*Latisana, Tolmezzo.*
Isonzo, ...	*Aquileja*, n., *Gradisca*, Görz.
Roja, ...	Udine.
Idria, *l*	*Idria.*

Lakes.—Italy is studded with many beautiful lakes, especially the basin of the Po, near the foot of the Alps, where lakes Garda, Como, Maggiore, &c., are unrivalled for their enchanting scenery.* They are numerous also in Central Italy, between the branches of the Apennines, where they sometimes occupy the craters of extinct volcanoes, and have no visible outlet. The following are the principal lakes in the order of the river-basins in which they occur :—

Basin of the Po—*Garda* (560 sq. m. ; elevation, 227 feet above the sea), drained by the Mincio ; *Iseo*, by the Oglio ; *Como*, by the Adda ; *Maggiore*, by the Ticino ; *Lugano*, by the Tresa. Ombrone—*Castiglione* and *Orbitella*, in the Maremma of Tuscany. Arone—*Bracciano*, in province Latium. Marta—*Bolsena*, in province Latium. Tiber—*Perugia*, with no visible discharge. Garigliano—*Celano* or *Fucino*, in Abruzzo, drained by an artificial channel ; *Averno*, 10 miles W. of Naples, occupies the crater of a volcano.

Climate.—From its position, form, and configuration, Italy enjoys an extremely delightful climate, which permits the productions of the temperate, and some of the torrid zone, to mingle on its almost uniformly fertile surface. In the northern parts the cold is sometimes severe ; but it is little felt in the centre and south, where the plains enjoy an almost perpetual spring. The valley of the Po considerably resembles in temperature the central parts of France : the lakes freeze in winter, and the orange and lemon will not ripen in the open air. At Rome frost seldom lasts over the night, and snow falls, on an average, on only two days in the year, as also at Florence, Naples, and Palermo. At Venice snow falls on five days annually, at Milan on ten, while in Malta snow-flakes are never seen. In the north the rainfall is great, being at Tolmezzo, near Udine, 100 inches; at Rome, 35 inches ; while at Palermo, in Sicily, it is only 22 inches, The average for the entire peninsula is about 45 inches. The mean annual temperature of Rome is 59°.5 ; mean winter, 45°.2 ; and mean summer, 74°.2. The mean annual temperature of Milan is 55° ; Naples, 61° ; Palermo, 64°, and Malta 67°.

The higher Alps are covered with perennial snow, to the level of 9500

* The lakes of N. Italy are deep reservoirs in the bosom of the mountains. Garda is the largest, and is celebrated for the deep-blue hue of its waters, while Maggiore is reckoned the most beautiful, and Como the most sublime.

feet. Nearly one-half of Mont Blanc is always protected by a snowy envelope, which thickens every winter by fresh accumulations, and contracts again in summer and autumn by the action of the sun's rays, and by the constant discharge, from its lower margin, of those famous glaciers which are the admiration of all travellers.—(See under "Switzerland.") The climate is, generally speaking, highly salubrious, save in the pestilential marshes of Tuscany, called the *Maremma*, and the *Campagna di Roma*, in the Pontifical States, the malaria from which is extremely injurious to human life. The prevailing winds are W. and S.W., and during their continuance the air is pure and healthy; but the southern portion of the country is frequently visited by the pestilential winds of Africa, during which vegetation is arrested, and the human frame becomes languid and feeble.

Geology and Minerals.—Tertiary and post-tertiary strata cover greatly more than a half of Italy, especially the extensive basin of the Po; the northern portion of the peninsula from Genoa to Civita Vecchia, on the W. side; and the entire belt lying between the Apennines and the Adriatic, on the E.; together with a large part of Sicily and Malta. Secondary strata occupy considerable areas in central and southern Italy, especially from the Tiber to the G. of St Eufemia; a large tract in the centre of Sicily; and the southern slope of the Rhætian and Carnic Alps. The central and higher ridges of the Alps consist of gneiss and other primary rocks, flanked by limestone, sandstone, and slate; and primary strata prevail on both sides of the Strait of Messina, and in the east side of Corsica and Sardinia. Granite rarely occurs except in the islands just named, where it covers large areas. Trap-rocks are found in numerous small patches around the G. of Genoa and N. of the Po; and volcanic formations are extensive, especially around Rome, Naples, Malfi, the E. side of Sicily, and the N.W. corner of the island Sardinia, more particularly in the neighbourhood of Syracuse and Mount Etna, as also in the Lipari Isles, where Stromboli, Vulcano, and Vulcanello are still active volcanoes.

Minerals.—The mineral products of Italy, though numerous, are not turned to much account, mining being everywhere neglected. There are few metals, except iron and lead, the first of which is very abundant in Elba, while copper, manganese, cobalt, and quicksilver are found in the Apennines: coal is plentiful in Venetia, Sardinia, and Tuscany; salt, alum, and borax in many localities; alabaster in Tuscany; and beautiful statuary marble at Carrara and other places. But the volcanic products of Italy, especially sulphur, nitre, and lava, are of greater value than all its other minerals, nearly all the sulphur required in Europe being obtained from Sicily. The principal minerals of the Alps are iron, copper, lead; but quicksilver, rock-salt, and some gold and silver, are met with.

Botany and Agriculture.—The indigenous vegetation of Italy, including the Alpine region in the N., is mainly embraced within Schouw's *first* and *third* phyto-geographic regions. The first, or *Arctic-Alpine Region*, comprehends the summits of the lofty mountain-ranges, while the low grounds belong to the third or Mediterranean Region. Italy, as a whole, presents an admirable epitome of the characteristic floras of all the countries of Europe, Western Asia,

and Northern Africa. According to Cesati, the number of flowering-plants in Lombardy alone amounts to 2568 species, of which 514 are monocotyledons, and 2054 dicotyledons.

In Sicily, Naples, and Malta, in addition to the plants common to all the peninsula, not a few tropical species appear, such as the cotton-plant, sugar-cane, papyrus, pistachio, and date-palm. The Indian fig also, a species of cactus, grows wild in Sicily. All these ripen at an elevation of about 600 feet; evergreens flourish at 2000 feet; the oak and chestnut grow on the mountain-sides as high as 4000 feet; wheat thrives at 4500 feet; and the beech at 6000 feet. In Central Italy we find the flanks of the Apennines covered with a rich and varied vegetation up to 3200 feet; the lower zone is occupied by the orange, citron, olive, and palm; forests are rare; and the mountains, above the level indicated, present bare rocks devoid of vegetation. The Alps afford excellent pasture, and the forests contain a great variety of timber. The vertical limits of vegetation along their sides are as follows:—The dwarf-palm and orange arrive at maturity at the foot of the Maritime Alps; wheat is cultivated at the height of 3600 feet; oats, 4300 feet; barley, 5100 feet; the chestnut grows in the valleys at 3600; oak, 4500; pine and larch, 6500 feet. Human inhabitants are found as high as 6300 feet, where potatoes and turnips are the only esculents. The zone lying between the upper limit of trees and the lower limit of perennial snow, is the province of the *Alpine flora* above alluded to, characterised by the juniper, alder, rhododendron, willow, cranberry, saxifrages, mosses, and lichens, extending to 9500 feet.

Agriculture.—Were the Italians as active, industrious, and skilful as their soil is good and their climate propitious, few countries in the world could rival Italy in agricultural wealth and prosperity. So far, however, is this from being the case, that there is scarcely a country on the continent which does not leave it behind in all matters connected with successful husbandry. In Lombardy, Venetia, and Piedmont, however, agriculture is better understood; the soil, which is a rich alluvium, is cultivated with great care, and artificial irrigation is extensively practised. Here the principal crops are rice, maize, wheat, rye, oats, barley, vines, olives, figs, oranges, citrons, hemp, flax, and the mulberry plant. About two-fifths of the peninsula are under cultivation, the remainder being either bare rocks, devoid of vegetation, or available only for summer pasturage. Vegetation is never interrupted on the lower grounds, especially in the southern half of the peninsula. The vine flourishes universally, but the wines of Italy cannot compete with those of France and Spain. Little wine is exported, except from Tuscany and Sicily. The Tuscan wines are of inferior quality, but the Marsala wines of Sicily are extensively consumed in England and America, owing to their cheapness. The Neapolitan wine is the best in Italy; the celebrated *Lachryma Christi*, a red wine of great excellence, is grown in vineyards on the flanks of Vesuvius. Olive oil is the principal article of export from the Neapolitan portion of the kingdom, but some good oil is also produced in Tuscany. In many districts, however, the mulberry plant is now supplanting the olive. In Southern Italy, where the soil is volcanic, well watered, and highly fertile, the chief crops are wheat, maize, rice, cotton, indigo, sugar, olive oil, tobacco, dates, melons, and other fruits.

Zoology.—There seem to be few, if any, wild animals peculiar to the Italian peninsula, unless the crested hedgehog, found in the south of Naples, be an exception. On the other hand, however,

few species are wanting here of those found in the other parts of Southern Europe.

The Mammalia comprise 68 species, including 42 carnivora, 16 rodents, 9 ruminants, and 1 pachyderm—viz., the wild boar of Calabria. The carnivora embrace the bear, badger, marten, dog, wolf, fox, civet, wild-cat, shrew, desman, and numerous bats; the ruminants, the buffalo, deer, goat, and sheep; and the rodents, the hare, squirrel, dormouse, and arvicola. Of the 294 species of Birds there are numerous species unknown in the British Isles. Reptiles of every order are very numerous, embracing no fewer than 47 species. Of the 444 Fishes found in the Mediterranean, the great majority frequent the coasts of this peninsula; and some of the fisheries there established, especially those of the tunny, anchovy, pilchard, and mackerel, are of great value. The Articulated animals are also very numerous, including the bee and silkworm (both of which are of great economic importance); the tarantula, scorpion, and white ant, all highly noxious; the locust, which not unfrequently makes its appearance in devastating swarms; and the butterflies, remarkable for the number and beauty of the species. The molluscs, crustaceans, echinoderms, sponges, and corals of the Mediterranean are very numerous, but seldom differ specifically from those of the Lusitanian and West African regions, from the former of which, especially, its fauna appears to have been a colony.*

Ethnography.—From the earliest dawn of history, Italy contained a number of distinct races. Who were its earliest inhabitants, and from what country they entered the peninsula, are questions still involved in great obscurity. It is pretty generally allowed, however, that the aborigines of the south, who are known by the various names of Pelasgi, Siculi, Œnotrians, and Itali, were a Sanscritic race, and allied to the Celts, Teutones, and Sclaves, the earliest settlers in Western and Northern Europe; that they entered Italy from the north, at various times, from 2000 to 1350 B.C.; and that they were subsequently driven southwards by the Etruscans, Ligurians, and other tribes of uncertain origin. In 753 B.C. Rome was founded, according to some, by the descendants of a colony from Troy, and gradually extended its sway over the entire peninsula, and at length over the greater part of the whole world as known to the ancients. In the fifth century of our era the Goths invaded Italy, and overthrew the Roman Empire. The Italian people of the present day are, therefore, a very mixed race, formed of the union of the aborigines with Greeks, Gauls, Goths, Germans, and Arabs.

Language.—The Grecian colonists, in common with all the other tribes above enumerated, came in the course of time to lose their original dialects; and, as early as the reign of Augustus, Latin was the spoken language of all Italy. The modern Italian, a soft, euphonious language, is more closely allied to the Latin than any other Greco-Roman tongue. Of its numerous dialects, which differ widely from each other, the Tuscan is the most refined and harmonious, being spoken by the educated

* The Lusitanian region of marine life embraces the eastern side of the Atlantic from the N.W. of France to the Canary Isles, and lies between the Celtic and African regions. —(See p. 104.)

classes in all parts of the peninsula, and having been long the almost exclusive channel of Italian literature.

Religion and Education.—The entire population of Italy, with the exception of 25,000 Waldensian Protestants in Piedmont, who, after ages of persecution, are now allowed freedom of worship, belongs to the R. Catholic Church. Until the recent revolutions, when the Pope's temporal power was so terribly shaken, no other form of worship was tolerated in any part of the peninsula. Now, however, this state of things is changed considerably for the better; Protestants are allowed freedom of worship in all the cities and towns of the Kingdom of Italy, while even in the former Papal States a limited degree of toleration exists, and Protestants are allowed to meet for worship inside the walls of Rome. The education of the people is also better attended to. Formerly very few of the peasantry could either read or write, except in Sardinia, which for many years has formed an honourable exception to the general rule. But now common schools are beginning to appear in all directions; newspapers and railways are on the increase, and, above all, the Word of God in the vernacular may now happily be seen in multitudes of villages and hamlets throughout the peninsula. Previous to the revolution of 1860, there were five universities in the kingdom of Sardinia—viz., those of Turin, Genoa, Cagliari, Sassari, and Pavia; in Tuscany, three—those of Pisa, Florence, and Siena; in the Pontifical States, four—the University of Rome, the University of Bologna, the Collegio Romano, and the Collegio de Propaganda Fide; in Naples, three—those of Naples, Palermo, and Catania. Altogether, there are now 22 universities in Italy, many of them being of ancient foundation.

National Character.—The modern Italians are described as "a handsome, lively, and intelligent people. The men are well formed, rather slim than stout, but strong and agile, with a dark complexion, expressive countenances, dark sparkling eyes, and, generally, black hair. The women have narrow foreheads, black or dark-brown hair, large, brilliant, and expressive eyes, a beautiful nose, which, with the forehead, forms the elegant Roman profile; but the lower classes, in consequence of living wholly on vegetable food, and of hard labour under a burning sun, rarely display any peculiar attractions. The prominent traits of the Italian character are love of ease and pleasure, and an inborn capacity for appreciating the beautiful in every department of art, which has rendered their country the chief school for sculpture, painting, and music."

Literature.—From the splendid galaxy of literati which for ages has illumined this classic country we can only instance a few of the most conspicuous stars:—

CLASSICAL LITERATURE: Plautus, Terence, Lucretius, Cicero, Cæsar, Virgil, Horace, Livy, Ovid, Sallust, Nepos, Juvenal, Pliny, Tacitus, Quintilian. SACRED LITERATURE: Gregory the Great, Thomas Aquinas, Cajetan, Baronius, Bellarmine, Paolo Sarpi, Pallavicini, Martini, Diotati, De Rossi, Cardinal Mai. POETRY: Dante, Petrarch, Boccaccio, Pulci, Boiardo, Ariosto, Berni, Colonna, Guarini, Tasso, Metastasio, Alfieri, Foscolo, Parini. HISTORY: Platina, Machiavelli, Varchi, Davila, Guicciardini, Bentivoglio, Strada, Maffei, Muratori, Lanzi, Vasari, Denina, Tiraboschi, Farini, Vico. PAINTING: Cimabue, Leonardo da Vinci, Michael Angelo, Berretini, Battoni, of the *Florentine School*. Raphael,

Giulio Romano, Barocci, Sacchi, Claude of Lorrain, Poussin (Gaspard), of the *Roman School*. Titian, Paolo Veronese, Canale, of the *Venetian School*. Correggio, Caracci, Guido, Grimaldi, Colonna, of the *Lombard and Bolognese School*. SCULPTURE: Niccola Pisano, Donatello, Cellini, Bernini, Algardi, Michael Angelo, Canova. MUSIC: Palestrina, Farinelli, Paganini, Lully. SCIENCE AND PHILOSOPHY: Cardan, Vanini, Galileo, Toricelli, Malpighi, Cassini, Morgagni, Galvani, Volta, Melloni. TRAVELS AND DISCOVERY: Christopher Columbus, Amerigo Vespucci, Marco Polo. MISCELLANEOUS LITERATURE: Poggio, Laurentius Valla, Politian, Pico Mirandola, Bembo, Aldo Manuzio, J. C. Scaliger, Maranx, Gravina, Crescimbini, Facciolati, Forcellini, Beccaria, Filangieri.

Government and Finance.—With the exception of Sardinia, which has enjoyed free institutions since 1848, all the Italian states had for generations been groaning under despotisms of the most extreme type. Civil and religious liberty were everywhere unknown; and freedom of worship, freedom of speech, freedom of the press, and liberty of the subject, effectually suppressed. The inextinguishable love of liberty, however, in the bosoms of the people, stimulated by the example and influence of Sardinia, broke out at length in a general revolution, which terminated in hurling the despots from their thrones. In 1859, Lombardy was wrested from Austria and ceded to Sardinia; in the following year Parma, Modena, and Tuscany, having expelled their sovereigns, also attached themselves to that state; while still more recently, Garibaldi, a Sardinian general, raised the standard of revolt in Sicily, crossed the Strait of Messina, overran the Neapolitan territories and the Pontifical States, and thus laid all the remainder of Italy, with the exception of Rome and Venetia, at the feet of Victor Emmanuel. Finally, Venetia was ceded by Austria at the termination of the Continental war of 1866; while during the Franco-German war of 1870, the French garrison having evacuated Rome, that city with its territory was taken possession of by Victor Emmanuel. The legislative authority rests conjointly in the king and parliament, the latter consisting of two chambers,—viz., the Senate, which consists of princes of the blood-royal, and of an unlimited number of members nominated for life by the king; and a Lower House, elected by a majority of all citizens who are 25 years of age, and pay taxes to the amount of 40 lire (£1, 12s.) The executive is vested in the king, and is exercised by him through responsible ministers. In 1874, the army numbered 200,000; the navy, 91 vessels of war, carrying 800 guns; receipts, £62,000,000; expenditure, £62,000,000; public debt, £390,000,000.

Manufactures and Commerce.—Manufacturing industry is still at a low ebb in all parts of the peninsula, notwithstanding the great political changes that have recently taken place. A liberal constitutional government, favourable to free-trade and moderate tariffs, with the many other advantages resulting from the incorporation of the numerous states formerly existing in the country into one king-

dom, cannot fail to inaugurate a new era in the commercial and manufacturing history of the country.

Generally speaking, Italian workmen are inferior to those of other European countries. Their leading characteristic is that their efforts are more directed to the production of articles of luxury than to those of utility. Among textile fabrics, silks and velvets are the most important, especially in northern and central Italy. By far the greater part of the raw and thrown silk imported into England from France is not produced in that country, but in Italy. The annual value of the silk crop is estimated to exceed £10,000,000. Besides these, woollen textures for home consumption are manufactured in Sardinia; paper and straw-plait in Tuscany; leather, gloves, musical instruments, glass wares, cordage, wine, and soap, in central Italy, where also sulphur and salt are prepared for exportation; while in Naples the principal articles, besides silks, are woollens, linens, hosiery, straw-hats, sausages, macaroni, essences, perfumery, glass, soap, musical strings, filigree-work, and coral ornaments. The manufactures of Venetia are very various. The famous glassworks of Venice produce magnificent mirrors, with every variety of artificial pearls and gems, beads, enamel, and mosaic works, &c.; while jewellery, gold and silver stuffs, velvets, silks, laces, soaps, and wax-lights, are extensively manufactured. The commerce is considerable, is rapidly increasing, and is chiefly carried on with Great Britain, the south of Europe, and the Levant. Fully two-thirds of the foreign trade of Venice is carried on under the British flag. The chief articles of exportation are silks, olive oil, wines, sulphur, borax, fruits, oak and cork bark, anchovies, macaroni, essences, soap, and the other articles above enumerated; while the principal imports are cotton stuffs, iron, steel, hardware, and coal, from Great Britain; wool from the Levant; corn from Odessa; and wines from France and Spain. In 1873, Britain sent to Italy goods to the value of £7,500,000, and received in return goods to the value of £3,019,582. The imports from France into Italy average £8,000,000 sterling, and the exports from Italy into France are about equal in value. Next in order to France and Britain, but far below, come Austria and Switzerland. The commercial marine of the Kingdom of Italy, in 1870, comprised 17,500 sailing vessels, carrying 925,000 tons, and 103 steamers, carrying 25,000 tons—in all, 17,600 vessels, carrying 950,000 tons.

Internal Communication.—Owing to the want of energy on the part of the people, their abject poverty, and the innumerable discouragements to which they have been subjected by their rulers, the great thoroughfares of commerce are still in a backward condition.

Till very recently *Railways* were almost unknown in the peninsula, the total number of miles open for traffic, in 1858, being only 700—viz., for Sardinia 390 miles, for Parma and Modena 96 miles, for Tuscany 150 miles, and for Naples 64 miles. Of late years, however, the railway system has made rapid progress throughout all parts of the peninsula. In 1870, there were 3667 miles open for traffic in the Kingdom of Italy, while in 1874 they amounted to 4237 miles. The most important line is the Mont Cenis railway, which forms the shortest route from Paris to Alexandria, and which at present carries our East Indian mails. Beginning at M. Cenis, it follows the course of the Po to Piacenza, thence to Rimini on the Adriatic, the coast of which it traverses to Brindisi near the S.E. extremity. Lombardy abounds with *Canals*, but they are mostly used for the purposes of irrigation, the principal exceptions being

the canal from Milan to the Ticino, probably the oldest canal in Europe, and that from Milan to Pavia. Venetia abounds with canals, which in general are very short. In Tuscany there is a canal from Pisa to Leghorn, another from Pisa to the Serchio, uniting the Arno with the Serchio; and a third, named the Chiana canal, 37 miles in length, uniting the sources of the Arno and Tiber. In Venetia and Piedmont the roads are well constructed and kept in good repair; but in central and southern Italy they are in a most wretched condition. There are no good roads leading across the Apennines, notwithstanding their moderate elevation, and they are in general not available for wheeled carriages. For the various mountain-passes leading from Italy across the Alps, see p. 289.

GREECE.

Position and Boundaries.—The Kingdom of Greece is bounded on the N. by European Turkey; W., by the Ionian Sea; S., by the Mediterranean; and E., by the Ægean Sea or Archipelago, which separates it from Asia Minor. The continental portion lies bet. lat 36° 23′ and 39° 30′ N.; and bet. lon. 20° 45′ and 24° 7′ E.

Athens, the capital, near the centre of this area, is on the same parallel of latitude as the Azores, Cordova, Mount Etna, Smyrna, Tabriz, Astrabad, Yarkand, Tsi-nan, San Francisco, and Washington; and on the same meridian as Hammerfest, Mittau, Lemberg, Widdin, Derna (in Tripoli), and Cape Delgado. The form is extremely irregular, being broken up by straits and deep inlets of the sea into a series of peninsulas and islands, which stand to Europe in the same relation as Europe does to Asia. Extreme length of the continental part, 200 miles; breadth, on the parallel of Athens, 170 miles. Surrounded by the sea on three sides, and stretching out between the three continents of the Old World, Greece was the most favourably situated of all ancient countries, not even excepting Palestine. In proportion to its area, the coast-line greatly exceeds that of any other country, being estimated at one mile of seaboard to every seven miles of surface. The surface, however, is highly mountainous while the centre of the Morea forms an elevated plateau.

Area and Population.—The area of Greece, including the Ionian Islands, ceded to it by Great Britain in 1864, amounts to 20,152 sq. m., or two-thirds the size of Scotland. The population, in 1871, was 1,457,894, or somewhat more than two-fifths the population of the latter country. This area gives nearly 72 persons to each sq. m. Ancient Greece, including Epirus and Thessaly, is supposed to have contained at one time 3,500,000 inhabitants.

Political Divisions.—Previous to 1830, and whilst Greece was under the yoke of Turkey, the country was divided into three provinces—viz., Livadia in the N., Tripolitza in the S., and the Archipelago in the Ægean Sea. In 1838 it was divided into twenty-four governments, twelve of which were in the Morea, eight in Hellas,

while the remaining four comprised the Cyclades and Sporades. But in 1845 the whole country was divided into the following 13 *nomos*, the last four of which are insular:—

Hellas or Northern Greece.

Acarnania and Ætolia.—Missolonghi 6 (G. of Patras), Vonitza 3 (G. of Arta), Lepanto 3 (G. of Lepanto).

Phthiotis and Phocis.—Lamia 5 n. (G. of Lamia), Salona 6, Castri n. (Bay of Salona), *Thermopylæ* (Hellada).

Attica and Bœotia.—Athens 45, Piræus 6 (G. of Ægina), Thebes 9 (Asopo), Livadia 9 n. (L. Topolias), *Marathon* (E. Co. of Attica).

Eubœa or Negropont.—Negropont 5 (Chan. of Talanta), Karysto 3 (Chan. of Egripo).

The Morea.

Argolis and Corinth.—Nauplia 10, Argos 9, Spezzia 10, Hydra 10 (G. of Argolis), Corinth 2 n., Vostitza 3 (G. of Lepanto).

Achaia and Elis.—Patras 20 (G. of Patras), *Olympia* (Rufia).

Messenia.—Calamata 6 (Nedon), Cyparissia 3, Navarino 2 (W. Co.)

Laconia.—Sparta 2, Mistra 2 (Eurotas).

Arcadia.—Tripolitza 7 (Roufia).

The Islands.

Cyclades.—Syra 21 (I. Syra), Andros 5 (I. Andros), Naxia 5 (I. Naxos).

Ionian Isles.—Corfu 15 (I. Corfu), Argostoli 5 (I. Cephalonia), Zante 20 (I. Zante), Amaxichi 7 (E. Co. Leucadia).

Descriptive Notes.—The towns of Greece are all very small; of those enumerated above, not more than twenty exceed 5000 of population; eight exceed 10,000; while only four exceed 20,000.

Mesolonghi, a small fortified town, which greatly distinguished itself in the war of independence: here Lord Byron died in 1824. **Lepanto** or **Nepakto**, near which the fleet under Don John of Austria totally defeated that of the Turks in 1571. **Lamia** or **Zeitoun**, near the famous pass of Thermopylæ, where Leonidas, with his 300 Spartans, fell in opposing the Persian invaders under Xerxes, B.C. 480. **Salona**, at the southern base of Mount Parnassus: on its acropolis are picturesque ruins of its ancient citadel. **Castri**, near the famous Castalian Spring: here stood the celebrated temple of Apollo, the principal seat of his worship: here were celebrated the Pythian games; and it was one of the two places of meeting of the Amphictyonic Council. **Athens**, capital of the kingdom of Greece, is one of the most celebrated cities in the world, and the most renowned for its literature, science, and fine arts. It is extremely ancient, having been founded, at least in part, by Cecrops, a hero of the Pelasgic race, B.C. 1556. It was burnt by Xerxes B.C. 480, but was soon rebuilt by Themistocles, and not many years later it was adorned by Pericles with the most splendid architectural works the world has ever seen. The splendour of Athens, however, chiefly consisted in its public buildings, for the private houses, even those of its greatest men, were insignificant, and

the streets narrow and irregular. The city suffered severely during the siege of Sulla, B.C. 86. Hadrian embellished it with many splendid public buildings, A.D. 123. Alaric, king of the Goths, in A.D. 396, reduced it almost to a heap of ruins. Since then it has belonged successively to Goths, Byzantines, Burgundians, Franks, Catalans, Florentines, Venetians, Turks, and Greeks. During the greater part of the middle ages it was an almost deserted place; but in 1833 it became the seat of the Greek Government. Athens was the birthplace of many illustrious persons, among whom may be mentioned Socrates, Plato, Phidias, Pericles, and Alcibiades. **Piræus**, the port of Athens on the Gulf of Ægina, contains the tomb of Themistocles. **Thebes** or **Thiva**, one of the most ancient cities in Greece, founded by Cadmus about B.C. 1551, and at one time a place of great wealth and importance. Here Cadmus the Phœnician first introduced the use of letters into Europe. It was the birthplace of Hesiod, Pindar, Pelopidas, and Epaminondas. It was the scene of the tragic fate of Œdipus, and of the war of "the seven against Thebes." **Livadia**, the capital of Hellas under the Turks. **Marathon**, a hamlet situated in a plain watered by the Charadrus. In this plain was fought the celebrated battle between the Persians under Datis, and the Athenians under Miltiades, B.C. 490. **Negropont** (Egripos) a maritime town, and capital of the island Eubœa. It is a very ancient town, and planted numerous colonies, among which were Cumæ in Italy, and Naxos in Sicily. It was also a place of great military importance, as it commanded the navigation between the north and south of Greece. Here Aristotle died, B.C. 322. **Nauplia**, on the Gulf of Argolis, is a strongly-fortified town, and one of the most important in modern Greece. **Argos**, long the capital of Argolis, is considered the most ancient city of Greece. **Corinth**, once a great and opulent city, and the emporium of the trade between Europe and Asia, is now reduced to but a mere village, exporting currants, wheat, oil, honey, and wax. Its citadel, on a hill 1500 feet high, would, if properly fortified, be one of the strongest fortresses in the world. Its navy was numerous and powerful: here the first triremes were built; and the first sea-fight on record was between the Corinthians and their colonists the Corcyræans. **Spezzia**, beautifully situated on an island of same name in the G. of Argolis, is remarkable for the salubrity of its climate. **Hydra**, an important commercial town, situated on a barren rock in an island of same name. **Patras**, a fortified seaport, and the principal seat of the foreign trade of Greece. **Olympia**, the name of a small plain, where the famous Olympic Games were celebrated from the earliest times; but the Olympiads were not employed as a chronological era till the victory of Corœbus in the foot-race, B.C. 776. **Calamata**, near the head of the Gulf of Koron, maintains a brisk trade in oil, silk, and figs, and is the seat of the bishopric of Messenia. It was burnt by Ibrahim Pasha in 1825, but has been rebuilt. **Navarino**, a fortified seaport town, is chiefly celebrated in modern times for the victory of the English, French, and Russian fleets over those of the Turks and Egyptians in 1827. **Sparta**, after long lying desolate, is now being rebuilt, and has become the capital of Laconia. In ancient times it was the chief city in the Peloponnesus, and one of the most famous in Grecian history. **Tripolitza**, the capital of the Morea under the Turks, was stormed and taken by the Greek insurgents in 1821, and again by the troops of Ibrahim Pasha in the same year, who razed it to the ground: but it has been since rebuilt. **Syra** or **Hermopolis**, the principal commercial city in Greece, and the residence of consuls of most European States. THE IONIAN ISLES.—**Corfu**, capital of the late republic of the Ionian Isles, has been strongly fortified by the British

Government, and is the seat of a university. **Zante**, a thriving town, and capital of the most fertile and densely peopled of all the Ionian Islands.

Capes.—Punta and Scropha, W. of Hellas; Klarenza, W. of the Morea; Gallo, Matapan, and Malea, S. of the Morea; Skillo, E. of the Morea; Colonna and Doro, S.E. of Hellas.

Punta, the ancient *Actium*, off which Augustus gained the great naval victory over Anthony and Cleopatra. *Colonna* (ancient Sunium), so named from the splendid temple of Athena which crowned its brow, the *columns* of which still exist.

Islands.—The islands are very numerous, and consist of four leading groups. 1. The Ionian Isles, W. of Greece, the principal being Corfu, Santa Maura, Cephalonia, Zante, and Cerigo. 2. Negropont or Eubœa, E. of Hellas, and the largest island in Greece. 3. The Cyclades, between the Morea and Asia Minor, principal—Andros, Tinos, Naxos, Paros, Syra, Zea, Thermia, Serfo, Siphanto, and Milo. 4. The Sporades, or "scattered islands," partly in the Gulf of Egina, and partly N.E. of Negropont.

Gulfs and Straits.—Gulf of Arta, N.W. of Hellas; Patras and Lepanto, between Hellas and the Morea; Koron, Laconia, and Argolis, S. of the Morea; Egina, between Argolis and Attica: Channels of Egripo, Talanta, and Trikeri, between Eubœa and the mainland.

Surface and Mountains.—The surface is almost wholly mountainous, but the hills are interspersed with fine valleys and a few plains of limited extent. The centre of the Morea forms an elevated plateau enclosed by three mountain-chains, one of which runs parallel to the deeply-penetrating Gulf of Lepanto, which is supposed to have been formed, at a remote age, by an earthquake.

The mountains of Hellas are a continuation of Mount Pindus, which separates Thessaly from Albania. On arriving at the Grecian frontier it separates into two branches, one of which (Mount Othrys) forms the boundary between Thessaly and Greece, and separates the basins of the Salembria and Hellada: highest summit, 5679 feet. The other branch pursues a S.E. direction to Cape Colonna in Attica, and is thence prolonged through the western chain of the Cyclades to Santorini. It consists of two minor ranges—viz., the Oeta range in the N., about 7000 feet high, but containing Mount Guiona, the culminating-point of Greece (8783 ft.), separated from the Othrys range by the basin of the Hellada; and the Parnassus range in the S., separated from the Oeta range by the basin of the Gavrios, and from the Morea by the Gulf of Lepanto: highest summits—Mount Parnassus, 8068 ft.; Mount Helicon, 4963 ft.; Mount Cithæron, 4630 ft.; Mount Hymettus, 3370 ft. A branch from Mount Cithæron proceeds along the Isthmus of Corinth into the Morea, and there ramifies into three small chains, which support between them the table-land of Arcadia: highest summits, Mount Taygetus or St Elias, 7903 ft.; Cylene or Ziria, 7788 ft.; Malevo, 6355 ft. None of the mountains of Greece fully reach the line of perpetual congelation, though several of them closely approach it.

Rivers and Lakes.—Owing to the peninsular character of the country, and the numerous deep indentations of the surrounding

seas, none of the rivers of Greece attains to any considerable magnitude, the principal streams being the Aspropotamo (anc. *Achelōus*), the Fidaris (anc. *Evenus*), the Roufia (anc. *Alpheus*), the Basili-Potamo (anc. *Eurotas*), and the Hellada (anc. *Sperchius*). The only lake of importance is Lake Topolias (anc. *Copais*), in the east of Hellas, and even it is little more than a reedy marsh.

Climate. — The climate is in general warm and delightful, and only inferior to that of Italy.

The summer is extremely warm, the temperature often rising to 100° Fahr.; but it is greatly modified by sea-breezes. At this season rain seldom falls; the smaller rivers are dried up; the air is remarkably clear, not a cloud being seen for several weeks. In autumn rain becomes frequent and copious, and the streams fill their channels. Winter does not exceed two months' duration, and is marked by rain in the plains and snow in the mountains, the latter retaining their covering till summer is far advanced, though none of them attains the limit of perennial congelation. Snow appears in October, and continues to fall till April. In March the olive buds and the almond is in blossom, while grain is ready for the sickle in May. The mean temperature of the whole country ranges from 64° in the S. to 59° in the N. Mean temperature of Athens 60°, winter 41°, summer 77°.

Geology and Minerals.—Crystalline rocks cover the south-eastern part of the Morea, as also Attica, Eubœa, the Cyclades, and Sporades. Tertiary strata line the western side, from the Gulf of Arta to Navarino in the Morea. The entire remainder is occupied with secondary rocks, which are chiefly of limestone, and hence the numerous caverns, subterranean rivers, and fissures emitting mephitic vapours, which ministered so largely to the mythology and poetry of the ancient Greeks: the limestone often assumes the form of the finest marble, which is extensively used for building and statuary. Volcanic rocks, though not found in the mainland, form considerable masses in some of the islands, one of which (Santorini) is indeed only a recently-extinct volcano. The *Mineral* treasures of Greece are considerable, though very sparingly worked. Marble is abundant, together with salt, sulphur, saltpetre, lignite, asbestos, mill-stones, whetstones, serpentine, fuller's earth, porcelain earth, argentiferous lead, and traces of gold. The mainland is singularly devoid of metals, but iron is found in Eubœa and some other islands; and coal occurs in Eubœa, Corfu, and the Morea. Wells of petroleum, which were known to Herodotus, still exist in Zante.

Botany and Agriculture.—The botany of Greece considerably resembles that of Southern Turkey and Albania. Dr Sibthorpe, in his 'Flora Græca,' enumerates 850 species, which he collected principally in Attica and Beotia. Most of our finer garden-flowers grow wild in Greece, as the Hyacinth, Ranunculus, Tube-rose, Narcissus, Iris, and Anemone. The natural vegetation of the country, from the sea-level to the height of 1500 feet, exhibits as great a variety of valuable trees, shrubs, and plants as can be found in an equal extent of country anywhere throughout the world. Among the most important and useful may be reckoned the olive, vine, orange, lemon, prickly

fig, almond, the date-palm (in Attica), the currant grape of Corinth, which is a species of vine yielding the currants of commerce, the citron, pomegranate, and banana. The water-melons and gourds are excellent. At elevations less than 1600 feet, the myrtle, mastich, and plane-tree flourish; while the mountains are covered with forests of pine.

Agriculture.—Only about a tenth of the surface is under cultivation, and the arable land is of very limited extent. A great part of the soil is of a thin and by no means fertile nature. Agricultural implements and operations are of the most primitive description, and the grain raised is only about two-thirds of that required for home consumption. The plough in use differs in no respect from that described by Hesiod, nearly 3000 years ago. The principal crops are—wheat, barley, maize, rice, coffee, tobacco, cotton, madder, flax, and figs; but the olive takes precedence of all others, both soil and climate being particularly favourable to its growth. The soil in most parts of Greece and the Ionian Islands is admirably fitted for the culture of the vine, which in ancient times formed a highly important article of industry; but owing to the misrule and rapacity of the Turks, for four centuries its cultivation was almost totally abandoned. It is now beginning to revive, and will, doubtless, ere long resume its proper place in the markets of Europe. Tino, one of the Cyclades, is famous for its Malmsey wine, and Sikind and Santorin produce wines of good quality. The cultivation of the mulberry has also of late been greatly extended.

Zoology.—The most common wild *Quadrupeds* are the bear, lynx, wildcat, boar, stag, roebuck, goat, badger, marten, wolf, fox, weasel, jackal, hare, and hedgehog. *Birds* comprise the vulture, falcon, owl, cuckoo, roler, kingfisher, teal-duck, stork, partridge, pigeon, quail, snipe, blackbird, goldfinch, nightingale, swallow, marten, flamingo, and pelican. The domestic animals are of inferior breeds, and the ass is almost the only beast of burden. Sheep are very numerous, and form, with goats, the only animals from which dairy produce is obtained. Bees are extensively reared, and honey is largely exported.

Ethnography.—The people of modern Greece are a mixed race, the pure blood of the Pelasgians having, in the course of ages, become largely intermixed with Sclavonic, Teutonic, and even Turkish elements. In some parts of Northern Greece, as also in the northern and eastern parts of the Morea, and some of the islands, Albanians constitute the majority of the inhabitants.

Language.—The ancient Greek formed one of the principal members of the Greco-Latin branch of the great Indo-European family. Modern Greek or Romaic differs as little from the ancient as some of the dialects of the latter differed from each other; and greatly more resembles it than the Romanic languages (French, Italian, and Spanish) do the Latin. (See p. 90). The Albanians also continue to speak the ancient language of their Illyrian progenitors, who seem to have formed a connecting-link between the Sclavonic and Greco-Latin races.—(See under "Turkey.")

Religion.—Nine-tenths of the population belong to the Greek or Eastern Church, which separated from the Western, A.D. 862. It mainly differs from the latter in not recognising a Vicar of Christ; in denying the in-

fallibility of ecclesiastical councils; in administering the Eucharist in two kinds; in denying the doctrine of purgatory and the adoration of images, (though that honour is freely conceded to paintings of the Deity, of the Virgin Mary, and of other saints); and, finally, in the celibacy of the clergy, and the use of the Scriptures by the laity. Roman Catholics are numerous in the Ionian Isles and the Cyclades, and enjoy, with other sects, a limited amount of toleration.

Education is in a backward state, but strenuous efforts are made by the state to improve it. Besides the Universities of Athens and Corfu, there are gymnasia at Athens, Nauplia, Patras, Syra, and Hydra; together with normal, polytechnic, and naval schools. Indeed, every important town has its gymnasium, and every village its common school.

Literature.—The literature of Greece, the most copious and brilliant in the history of our race, belongs almost exclusively to ancient times, and every scholar is more or less familiar with it. Of the few names contained in the following list, several were not natives of Greece:—

POETS: Homer, Hesiod, Tyrtæus, Sappho, Anacreon, Pindar, Æschylus, Sophocles, Euripides, Aristophanes. HISTORIANS: Herodotus, Thucydides, Xenophon, Polybius, Diodorus Siculus, Diogenes Laertius, Plutarch. ORATORS: Empedocles, Gorgias, Isocrates, Demosthenes, Æschines, Hermogenes, Longinus. PHILOSOPHERS: Thales of Miletus, Anaximander, Anaximenes, Anaxagoras, Pythagoras, Heraclitus, Democritus, Socrates, Plato, Aristotle, Epicurus, Zeno, Plotinus. MATHEMATICIANS AND ASTRONOMERS: Eudoxus, Euclid, Eratosthenes, Archimedes, Apollonius, Hipparchus, Ptolemy, Diocles, Proclus, Isidorus, Diophantus. GEOGRAPHERS: Posidonius, Strabo. PHYSICIANS: Æsculapius, Hippocrates, Herophilus, Galen. FINE ARTS: Agelādas, Myron, Phidias, Polycletus, Polygnotus, Apelles, Aristides.

Government, &c.—Greece, which had for ages groaned under the yoke of Turkey, revolted against that power in 1821; and after a long and severe struggle, in which it was aided by the European powers, secured its independence in 1829. In 1832 Otho, second son of the King of Bavaria, was appointed king, but abdicated in 1862, after which Prince George of Denmark accepted the crown. The government, at first nearly absolute, became, after the revolution of 1843, a constitutional monarchy. The executive is vested in the king and his responsible ministers, assisted by a council of state. The Chamber of Deputies, who are chosen by universal suffrage, consists of 170 members. The army, in 1873, amounted to 12,300 men and officers, including 1500 of a reserved force. The navy embraced 2 frigates, 2 corvettes, and 8 steamers, carrying 164 guns. The estimated Revenue for 1870 amounted to £1,218,000; the Expenditure to £1,210,000; and the Public Debt to £13,800,000.

Commerce and Manufactures.—The chief resource of the inhabitants of Greece consists in their maritime commerce. The Greeks are expert mariners; the great extent of coast-line gives them many facilities for maritime pursuits; and they have for a long time been the principal agents in conducting the commerce of the eastern part of the Mediterranean. In 1869, the total number of vessels that

entered and cleared the ports of Greece was 95,066, carrying 3,562,954 tons. Of these, 638, with a tonnage of 321,997, were British. The principal ports are the Piræus, Patras, Nauplia, Syra, and Corfu. The manufactures are few, and chiefly domestic, consisting of silk, cotton, and woollen stuffs; coarse pottery, leather, beetroot-sugar, and soap, are made in the principal towns; carpets, sail-cloth, and straw-hats in some of the islands: the women excel in embroidery, and dyeing in bright colours has been perpetuated from ancient times. Shipbuilding is also carried on at Syra, Lepanto, and other ports. The *Exports* embrace currants (the average annual value of which to Britain amounts to £700,000), cotton, olive-oil, wine, tobacco, wool, honey, wax, gum, silk, sponge, and valonia (a species of acorn used by tanners). *Imports:* manufactured goods (chiefly cotton from Great Britain), colonial produce, flax, timber, rice, drugs, &c.

Inland Communication.—The roads are few in number and of the most wretched description, except near the capital; and such as exist are infested with bands of robbers. A railway, however, now connects Athens with the Piræus (being a distance of 7 miles), opened in 1869; while a canal is contemplated to cut through the Isthmus of Corinth.

TURKEY.

THE Turkish or Ottoman Empire comprehends all the countries in which Turkish supremacy is directly or indirectly recognised. Its area and population are ill defined—the authority of the Sultan being little more than nominal in many extensive provinces. Its vast territories, though situated in the three continents which constitute the Old World, are strictly continuous, comprising a large territory in the extreme S. of Europe; another, three times as large, in the W. of Asia; and a third, of still greater dimensions, in the N.E. of Africa. It is bounded on the N. by the Transcaucasian provinces of Russia, the Black Sea, and the Hungarian provinces of Austria; on the W. by Dalmatia, the Adriatic and Mediterranean Seas, Algeria, and Nigritia; on the S. by the equator, Abyssinia, and the Gulf of Aden; and on the E. by Persia. Lat. 0°—48° 5′ N.; lon. 7° 45′—48° 15′ E.

This wide expanse of territory, equal in dimensions to the most famous empires of antiquity, is intensely interesting to every reflecting mind. It is *geographically* interesting, as lying midway between the four great oceans, thus occupying the central area of the Old World. It is *historically* interesting, as comprehending the scene of man's earliest history—his high origin, his happy Paradise, his early rebellion, and the first promise of his future restoration to fellowship with his Maker. Here the Antediluvians lived out their centuries of violence, and here the ark of Noah floated securely above that flood which exterminated the rebellious race; here the patri-

arch alighted to people afresh the desolate earth, and here his descendants attempted anew to oppose the decrees of Heaven;—here the most ancient empires were founded, the first cities built, the earliest arts cultivated, the temple of science founded, and the saving truths of revelation first published;—here wandered those pilgrim fathers who lived "as seeing Him who is invisible;" here their offspring were held in bondage, and the power of the Divine arm, working in their behalf, was revealed;—here was situated that "good land" which the Most High had kept in reserve for His peculiar people, "when He divided to the nations their inheritance, and separated the sons of Adam;" here seers prophesied, and inspired bards sang;—here God tabernacled amongst men, and the Son of God assumed the human form; here He suffered and died for man, and laid the foundations of a kingdom that is destined ere long to embrace all the tribes of ruined humanity. The capital of this vast empire is Constantinople, situated on the strait which separates the European from the Asiatic provinces, and containing above a million inhabitants. The administrative divisions are into *eyalets, paschalics*, or *governments*, each of which is governed by a Pasha or viceroy, and into *livas* or *provinces*, the governors of which are called Kaïmmakams, and sometimes Beys. The empire is said to consist of 29 eyalets, 12 of which are in Europe and 17 in Asia. The Turkish possessions in Africa are not called *eyalets*, but tributary states. Turkey in Europe contains 207,500 sq. m.; population, 13,240,000; Asiatic Turkey, 672,000 sq. m.; pop., 13,186,000; African possessions, 1,049,181 sq. m.; pop., 11,550,000—total, 1,928,681 sq. m.; pop., 37,976,000.

Historical Sketch.—The Ottoman Empire was founded at Prusa, in Bithynia, in A.D. 1298, by Osman or Othman I., surnamed Elghazi, or the Victorious. In 1353, the Turks first entered Europe, under Solyman, who crossed the Hellespont and landed at Gallipoli. In 1360, Amurath I. overran Eastern Europe, from the Danube to the Adriatic. Adrianople became the capital of European Turkey in 1362, and Constantinople was captured by Mahommed II. in 1453, thus terminating the Byzantine or Eastern Roman Empire. Servia was conquered in 1458, Moldavia in 1476, Egypt in 1516, Belgrade in 1521, Rhodes from the Knights of St John in 1522. Hungary became subject to the Turks by the battle of Mohacz in 1526, when Louis of Hungary was slain. Cyprus was ceded by the Venetians in 1573, and Candia taken in 1669, after a 25 years' siege. In 1686, Buda was retaken by the Imperialists, and Hungary wrested from Turkey. Transylvania was lost in 1699. Montenegro was ceded to Turkey in 1718, by the peace of Passarowitz; but she lost the Crimea in 1774, Bessarabia in 1812, and, finally, Greece in 1829; while her only acquisition of late years has been the southern portion of Bessarabia, ceded to her by the Peace of Paris in 1856.

TURKEY IN EUROPE.

Position and Boundaries.—N., the Hungarian provinces of Austria; W., Dalmatia, the Adriatic, and the Ionian Sea. S., Greece, the Ægean Sea, and the Sea of Marmora; E., the Black Sea and Bessarabia. It lies between lat. 38° 57′ and 48° 5′ N., and between lon. 15° 54′ and 29° 40′ E., thus occupying more than 9° of lat. and nearly 14° of lon.

Constantinople (lat. 41°, lon. 29°), near the centre of the empire, is nearly on the same parallel as New York, Madrid, Naples, Bokhara, and Pekin; and nearly on the same meridian as St Petersburg, Alexandria, and Port Natal. Leaving out Moldavia, which stretches northward 180 miles beyond the frontiers of Wallachia, the physical configuration of the remainder approaches a trapezium or truncated pyramid, with the base resting on the Save, Danube, and the Eastern Carpathians, and having its two sides respectively washed by the Adriatic and Black Sea. The greatest length from W. to E. is 650 miles; the extreme breadth, from the Save to the frontiers of Greece, 400 miles. The coast-line is extensive, and stretches along five seas; total length about 1300 miles, of which the Adriatic embraces 200, the Ionian Sea 100, the Ægean Sea and Sea of Marmora 600, and the Black Sea 400. The harbours on the west side are inferior, but many of the others are excellent, especially the Golden Horn.

Area and Population.—The area of European Turkey, including the Suzerain or Tributary States of Roumania (Wallachia and Moldavia), Servia, and Montenegro, is estimated at 207,500 sq. m., or four times the size of England without Wales; while by the latest census (1867), the population amounted to 13,240,000, being 81 persons to each sq. m. In England there are 389 persons to the sq. m.; hence, though the advantages of climate and soil are wholly on the side of Turkey, England is 4¼ times as densely peopled. The Suzerain provinces occupy an area of 69,634 sq. m., with a population exceeding 5 millions; while Roumania alone has an area of 46,708 sq. m., and a population of 4,424,961.

Political Divisions.—The European portion of the empire consists, as above described, of two main portions—Turkey Proper (including Bosnia, Herzegovina, Albania, Thessaly, Rumelia, Bulgaria, and Crete), and the Suzerain provinces of Roumania (Wallachia and Moldavia), Servia, and Montenegro, which are almost independent states.

Turkey Proper.

Bosnia and Turkish Croatia.—Bosna-Serai 70 (Migliazza), Zvornik 12 (Drin), Banialuka 15 (Verbas, *aff.* Save), Novi-Bazar 15 (Ibar).
Towns between 5000 *and* 10,000 *inhabitants.*—Travnik, Doboi, Juicza, Livno, Dubicza, Klintch.

Herzegovina.—Mostar 12 (Narenta), Trebinje 10 (Tribinschucza).

Albania.—Scutari 40 (Boyana), Jacova 18 (Drin), Prisrend 25 (Riaka), Kroya 15, Tirana 10 (Jantra), Berat 12 (Ergent), Delvino 10 (Pistricza), Janina 25 (Lake Janina), Durazzo 10, Valona 8 (W. coast).
Podgoricza, Carbonara, Tepeleni, Mezzovo, Dulcigno, El Bassan, Argyro-Kastro, Arta, Prevesa.

Thessaly.—Larissa 25, Tricala 12 n. (Salembria).
Ambelakia, Pharsala.

Rumelia (Macedonia and Thrace).—Constantinople or Stamboul 600 (Bosporus), Uskup 10 n., Kuprili 22, Istib 20 n. (Vardar), Vodena 12 (Vistritza), Monastir or Bitolia 30 (Tzerna), Salonika 100 (G. of Salonika), Seres 25 n. (Strymon), Adrianople 150, Philippopoli or Filibi 40, Tatar-

Bazardjik 10 (Maritza), Kirk-Kilissia 16 (Tearus), Selimnia 20, Eski-Sagra 20 n., Kazanlik 10 (Tondja), Gallipoli 50, Rodosto 40 (Sea of Marmora).

Pera, Alaklissi (*Pella*), Veria, Yenidja-Vardar, Servia, Neokhorio (*Amphipolis*), Kostendil, Dubnicza, Filibi (*Philippi*), Drama, Kavallo, Lagos, Enos, Demotika, Hirepoli, Erekli, Ainada, Burgas, Kossova, Jamboli.

Bulgaria.—SILISTRIA 23, Rustchuk 30, Sistova 20, Nicopoli 15, Widdin 25 (Danube), Tirnova 12 (Jantra), Sophia 30 (Isker), Shumla 60 (Kamtchik), Lescovitza 12, Nissa 16 n. (Morava), Rasgrad 15 (Ak-Lom), Varna 16, Baba-Dagh 10 (east coast).

Matshin, Hirsova, Rassova, Osman-Bazar, Eski-Djuma, Pravadi, Yeni-Bazar, Bergovacz, Samakov.

Crete.—CANDIA 30, Retimo 8, Canea 16 (N. coast).

SUZERAIN OR TRIBUTARY STATES.

Montenegro.—CETIGNE 1 n. (Boyana).

Servia.—BELGRADE 27, Semendria 12 (Danube), Pristina 12 (Ibar).

Kruschevacz, Kragojevacz, Passarovicz

Wallachia.*—BUCHAREST 200 (Dumbovitza), Ibrail 16, Giurgevo 11 (Danube), Ployesti 27 (Jalomnitza), Krajova 22 (Schyl).

Oltenitza, Tergovist, Kalefat, Tchernecz, Rimnik, Karakal, Foktchany.

Moldavia.*—JASSY 90 n., Husch 13, Botuchany 27 (Pruth), Ismael 25, Galacz 80 (Danube), Roman 11 (Sereth), Berlat 13 (Berlat), Pietra 12 (Bistritza).

Reni, Kilia, Bolgrad, Adjiud, Baku.

Descriptive Notes.—European Turkey, including the Tributary provinces, contains only three towns (Constantinople, Adrianople, and Bucharest) above 100,000 inhabitants; five between 100,000 and 50,000 (Bosna-Seraï, Salonika, Shumla, Gallipoli, Jassy); twenty-three between 50,000 and 20,000; sixteen between 20,000 and 10,000; and eighty between 10,000 and 5000.

Bosna-Seraï, a large, well-built, and fortified city, and the entrepôt for the commerce of Turkey, Dalmatia, and Southern Germany. **Mostar,** capital of Herzegovina, noted for its ancient Roman bridge, which consists of a single arch 95 feet in span; has manufactures of swords and firearms, and exports hides, wool, and cattle. **Scutari,** once the most important town of Illyricum, and the residence of the Illyrian King Gentius, is now the capital of Albania, and the centre of a great inland trade. Its merchants are the principal traders in Western Turkey. **Prisrend,** the residence of the Turkish governor, contains numerous mosques, with manufactures of firearms which are much celebrated. **Kroya,** capital of a liva, has manufactures of arms: its castle, now demolished, was Scander Beg's residence. **Delvino,** a fortified town, beautifully situated on the Pistricza, and surrounded by plantations of olives and oranges. **Janina** or **Joanina,** has a melancholy celebrity from its connection with the infamous Ali Pasha, who reduced it to ashes in 1820: though since rebuilt, its commerce, which was once extensive, has greatly declined. In its vicinity once stood Dodona, the seat of the most celebrated oracle of antiquity. **Arta,** founded by a Corinthian colony B.C. 660, was the capital of the kingdom of Pyrrhus. It has manufactures of russia leather, and of embroidery which is brought to great perfection. **Prevesa:** near it the

* United in 1861, and named Roumania.

ruins of Nicopolis, which was founded by Augustus in commemoration of his naval victory of Actium. **Larissa** or **Yenitcher**, once the capital of the Pelasgi, is an important manufacturing town, noted for its dyeworks. Near it **Satalge** (*anc.* Pharsalus), memorable for the decisive battle between Cæsar and Pompey, B.C. 48, which made Cæsar master of the Roman world. **Constantinople** (*Turk.* Stamboul, *anc.* Byzantium), a large and celebrated city, capital of the Ottoman Empire, and formerly of the Byzantine or Lower Roman Empire, occupies a triangular promontory of land between the Bosporus and its inlet, the Golden Horn. Its aspect, when approached by water, is of the most striking and beautiful description, exhibiting to view a crowd of domes and minarets, backed by the dark foliage of the cypress and other trees which shade the extensive cemeteries beyond the walls. The streets, however, are narrow and dirty, and are infested with dogs, which act as public scavengers. The most striking of the public buildings are the Seraglio, or imperial palace, which with its grounds occupies an area of three miles; the church of St Sophia, built by the Emperor Justinian, in the sixth century, now converted into a Mohammedan mosque; and the mosque of Achmet, a fine structure, with a beautiful marble pavement and six minarets. Manufactures unimportant, chiefly of morocco leather, saddlery, shoes, and meerschaum pipes. Byzantium was founded by Byzas, the leader of a Megarian colony, B.C. 658; was rebuilt by Constantine A.D. 330; was taken by the Crusaders in 1204, who retained it till 1261; and by the Turks in 1453, an event which marked the final extinction of the Roman Empire in the East. **Vodena** (*anc.* Edessa or Ægæ) was the ancient capital of Macedonia, and the place where its kings were interred: here Philip of Macedon was murdered by Pausanias, B.C. 336. **Monastir** or **Bitolia**, a principal entrepôt for the goods passing from E. to W. Turkey. **Salonika** or **Saloniki** (*anc.* Thessalonica), a large seaport, and the second commercial city in European Turkey; has a large trade in British produce, and numerous exports; it is a place of great antiquity, and is intimately connected with the travels and writings of St Paul. **Seres**, the centre of the cultivation of cotton in European Turkey. **Adrianople**, founded by the Emperor Hadrian, B.C. 378, was, next to Constantinople, the chief city of the Eastern Empire, and was the capital of the Ottoman Empire from 1366 to 1453. Next to the capital, it is the most populous city in European Turkey: it has an active commerce in manufactured goods, and numerous manufactures of silks, woollens, linens, dyeworks, and tanneries. **Philippopoli**, founded by Philip of Macedon: under the Romans, it was one of the most important towns of the country; has flourishing manufactures of woollen, silk, and cotton fabrics, leather, soap, tobacco, and a considerable transit trade. **Gallipoli**, the first European town taken by the Turks (1355), is now the principal station of the Turkish fleet; it is a place of great trade, and is noted for its leather. **Rodosto**, a fortified, large, and maritime city, with an important trade in corn, wine, and other commodities. **Silistria**, **Rustchuk**, **Sistova**, **Nicopoli**, and **Widdin**, commercial and fortified towns on the south bank of the Danube, and the scenes of numerous conflicts between the Turks and Russians. **Shumla**, occupying one of the principal passes of the Balkans, and strongly fortified, is reckoned one of the keys of the metropolis. It has been repeatedly attacked by the Russians, who have been as repeatedly repulsed. It has manufactures of tin and copper wares, silk goods, and leather. **Varna**, the principal port of Turkey on the Black Sea, and strongly fortified, is the place from which the Anglo-French army embarked for Sebastopol in 1854. **Cetigne**, cap. of Montenegro, is a mere village, situated

in an elevated valley. **Belgrade**, capital of Servia, a nearly independent principality, is a strongly-fortified city at the confluence of the Danube and Save, the entrepôt of commerce between Turkey and Austria, and the most western outpost of Mohammedanism in Europe. **Semendria**, a fortified town on the Danube, and the former residence of the Servian kings, now nearly in ruins. **Pristina** has the tomb of Sultan Amurath I. in the vicinity. **Bucharest**, capital of Rumania, is one of the principal entrepôts for the commerce between Turkey and Austria. Here was concluded the famous treaty of Bucharest, by which, in 1812, Bessarabia and a part of Moldavia were ceded by Turkey to Russia. **Ibrail** or **Brahilov**, a small fortified town on the Danube, and the chief port of the province. **Giurgevo**, opposite Rustchuk, of which it is the port. Here the Russians were defeated by the Turks in July 1854. **Krajova**, a flourishing commercial town, with an active trade in salt. **Jassy**, the provincial capital of Moldavia, and the residence of the hospodar or governor, covers a large area, the houses being interspersed with gardens. It maintains an active commerce in agricultural produce. **Ismael**, a strongly-fortified town, stormed by the Russians, under Suwarrow, in 1790, but ceded to Turkey in 1856. **Galacz**, the only port for the exports and imports of Moldavia, and the chief medium of commerce between Germany and Constantinople.

Capes and Islands.—Linguetta, on the W. coast of Albania; Paliuri, Drapano, and Monte Santo, the extremities of three peninsulas on the coast of Macedonia; Helles Bournu, at W. entrance of the Dardanelles; Emineh, N.E. of Rumelia; Kalagria, E. of Bulgaria. The ISLANDS belonging to Turkey are Crete, Scarpanto, and Caxo, at the mouth of the Ægean Sea; the Turkish Sporades (the chief of which are Lemnos or Stalymene, Imbros, Samothraki, Thaso, and Strati), in the N. of the Ægean Sea. The islands on the coast of Asia Minor, as Lesbos, Scio, Samos, Rhodes, and Cyprus, belong rather to the Asiatic portion of the empire.

Seas, Gulfs, and Straits.—The Adriatic and Ionian Seas, bet. Turkey and Italy; Ægean Sea, bet. Thessaly and Anatolia; Sea of Marmora, bet. Thrace and Anatolia; Black Sea, bet. European Turkey and Caucasia. Gulfs of Drin, Avlona, and Arta, W. of Albania; Str. of Otranto, joining the Adriatic and Ionian Seas; Channel of Corfu, between Corfu and Albania; Gulf of Volo, S.E. of Thessaly; Gulfs of Salonika, Cassandra, Monte Santo, Contessa, and Saros, S. of Rumelia; the Dardanelles or Hellespont, connecting the Ægean Sea with the Sea of Marmora; the Bosporus, or Channel of Constantinople, uniting the Sea of Marmora with the Black Sea; Gulf of Burgas, N.E. of Rumelia.

Surface and Mountains.—The greater part of the surface of European Turkey is an undulating region of hills and valleys, mountains and table-lands, of moderate elevation. There are three principal mountain-ranges, which divide the country into three almost equal climatic regions, and which form the great water-partings between the principal river-basins—viz., 1. The Western range, separating the basins of the Adriatic and Ionian Seas from those of the Danube and Ægean Sea; 2. The Balkan range, or Mount Hæmus, between the Danube and the Ægean Sea; and, 3. The Eastern Carpathians, between the basins of the Theiss and Lower Danube.

The *Western* or *Hellenic Range*, forming a continuation of the Julian Alps of Illyria, extending southward to the Grecian frontier, and separating the basins of the Adriatic and Ionian Seas from those of the Danube and Ægean Sea. This range is known as the *Dinaric Alps* in the north, and as *Grammos* or the *Pindus Chain* in the south: Mount Olympus, in the N. of Thessaly, the culminating point of the whole peninsula, 9749 feet, lies considerably E. of the range. The other loftiest summits are, Mount Dinara, in Croatia, 7458 feet; Mount Pindus, between Albania and Thessaly, 8950 feet; and Mount Ida, in Crete, 7674 feet. Height of snow-line on Mount Olympus, 9000 feet.

The *Balkan* or *Hæmus Range*, branching off at right angles from the Hellenic range, and extending eastward to Cape Emineh in the Black Sea, separates the basin of the Danube from that of the Ægean Sea. The Balkan proper, or principal chain, contains the highest summits of the range—viz., Tchar Dagh (anc. *Scardus*), in the N.W. of Macedonia, 9840 feet; Great Balkan, 8874 feet; Emineh Dagh, 7500 feet. A lateral range, named Despoto Dagh (anc. *Rhodope*), branches off southwards from the middle of the main range, separating the basins of the Maritza and Kara-su, and containing Rilo Dagh, 8313 feet, and Mount Athos, an outlier, 9628 feet.

The *Eastern Carpathians*, separating Wallachia and Moldavia from the Hungarian provinces of Austria, and the basin of the Theiss from that of the Lower Danube (see under "Austria").

Mountain-Passes.—Trajan's Gate and the Shumla Pass, in the Balkan range; the Iron Gate, Vulcan Pass, Rothenthurm Pass, Boza Pass, in the Carpathians, between Wallachia and Transylvania; Gymes Pass, between Moldavia and Transylvania.

Principal River-Basins.—The rivers of European Turkey are naturally divided into three groups—viz., those flowing westward to the Adriatic and Ionian Seas; those flowing southward to the Ægean Sea and Sea of Marmora, the principal of which are the Vardar, 170 miles in length, and the Maritza, length 260 miles, area of basin 18,200 sq. m.; and those flowing eastward to the Black Sea, the principal being the Danube, 1795 m. long, area of basin 306,000 sq. m.

Table of Rivers and Towns.—The following table comprises 50 of the principal rivers of Turkey, of which 18 enter the sea directly and 32 indirectly. Though the Danube with its tributaries was given at length under Austria, we insert again here, for the convenience of the student, the portion of its basin belonging to Turkey.

Basins inclined to the Adriatic and Ionian Seas.

Rivers.	*Towns.*
Narenta,	*Poschitel*, MOSTAR.
Brigava, *l.*	*Stolacz.*
Bistritza,	Imoschi, *Livno.*
Tribinschucza,	Trebigno.
Boyana,	SCUTARI, CETIGNE, n.
Moraka,	*Podgoricza.*
Drin,	*Alessio, Ochrida.*
White Drin,	Prisrend, n., Jacova.
Jantra,	Kroya, Tirana.
Scombi,	*El Bassan, Koridia.*
Ergent,	Berat.
Vojutza,	Avlona or Valona, *Carbonara, Tepeleni, Konicza.*
Deropuli, *l.*	*Argyro-Kastro.*
Pistricza,	Delvino.
Arta G. and R.,	*Prevesa, Arta*, Janina, *Mezzovo.*
Co. Albania,	*Antivari, Dulcigno*, Durazzo.

Basins inclined to the Ægean Sea.

Rivers.	*Towns.*
Salembria,	Larissa, *Ambelakia*, Tricala, n.
Satalge,	*Pharsala.*
G. of Salonika,	Salonika,
Karasu,	*Servia, Kastoria*, n.
Mauronero,	*Alaklissi, Yenidja-Vardar.*
Vardar,	Vodena, n., Istib, n., Kuprili, Uskup.
Tzerna,	Monastir.
Strymon,	*Neokhorio*, Seres.
Angites, *l*	Filibi, *Drama.*
G. of Kavallo,	*Kavallo.*
G. of Lagos,	*Lagos.*
Maritza,	*Enos*, n., Adrianople, Philippopolis or Filibi, Tatar-Bazardjik, *Kostenitz, Samakov.*
Erkeneh, *l*	*Hirepoli.*
Tearus,	Kirk-Kilissia.
Tondja,	Adrianople, *Jamboli*, Selimnia, Eski-Sagra, n., Kazanlik.
Dardanelles,	Gallipoli.
S. of Marmora,	Rodosto, *Erekli.*
Bosporus,	Constantinople, *Pera.*

Basins inclined to the Black Sea.

E. Co. of Rumelia,	*Midia, Ainada, Burgas.*
Kamtchik,	Shumla, *Eski-Djuma.*
Pravadi,	Varna, *Pravadi, Yeni-Bazar.*
Danube,	Baba-Dagh, Kilia, Ismael, *Reni*, Galacz, Ibrail, *Matshin, Hirsova, Rassova*, Silistria, *Oltenitza, Turtukai*, Giurgevo, Rustchuk, Sistova, Nicopoli, Widdin, *Kalefat, Tchernecz*, Semendria, Pancsova, Belgrade, &c.—(See under "Austria.")
Jalpuch, *l*	Ismael, *Bolgrad.*
Pruth, *l*	*Reni*, Husch, Jassy, n., Botuchany, n., Czernowitz.
Sereth, *l*	Galacz, *Adjiud*, n., *Baku*, Roman.
Berlat, *l*	Berlat.
Bistritza,	Pietra, *Bistritza.*
Jalomnitza, *l*	*Hirsova*, Ployesti.
Argish,	*Oltenitza, Tergovis, Argish.*
Dumbovitza, *l*	Bucharest.
Lom,	*Osman-Bazar.*
Ak-Lom,	Rasgrad.
Jantra,	Tirnova.
Alt or Aluta, *l*	Nicopoli, *Slatina*, Rustnik, Kronstadt, n.
Isker,	Sophia.
Schyl, *l*	Krajova.
Morava,	*Kragojevacz*, n., *Kruchevacz*, Lescovitza. Nissa, n.
Ibar,	Novi-Bazar, Pristina, *Kossova.*
Save,	Belgrade, *Schavacz.*
Drin,	Zvornik, *Belina.*
Bosna,	*Doboi, Maglai*, Traunik. n. Migliaz-Bosna-Serai. za,
Verbas,	Banialuka, *Juicza.*
Unna,	*Gradiska, Novi, Bihacz, Dubicza.*
Sanna,	*Novi, Kliutch.*

Lakes.—The principal lakes are Scutari, in the N.W. of Albania, drained by the Boyana; Ochrida, between Albania and Macedonia, drained by the Drin; and Janina, in the S.E. of Albania, in the basin of the Arta. There are also several large fresh-water lagoons near the mouth of the Danube, as Rassein, Jalpuch, &c.

Climate.—Owing partly to the elevation of the surface, and partly to its exposure to N.E. winds from the interior of Russia, the climate of Turkey is more severe than its latitude would lead us to expect; and it is, moreover, subject to sudden and violent fluctuations.

Though few of the mountains reach the limit of perennial congelation, snow lies during the greater part of the year in the recesses of the higher elevations; while in the plains of Rumania, the thermometer descends sometimes to 15° below zero, and the sledge is used for travelling, as in Russia. A great portion of Albania, being protected by mountains from N.E. winds, enjoys a delicious climate; but this region is liable to be

visited by destructive earthquakes. In the rocky districts of the interior, and in the maritime valleys of the W., the summer is excessively hot. Around the capital the climate is extremely variable, especially in winter and spring—snow and hard frost alternating with mild weather, and the temperature sometimes changing to the extent of 30° in a single night. At the mouth of the Danube the winter temperature is the same as in the interior of Iceland. The isotherm for January, which passes through the centre of that island and the S.W. of Norway, through Holland and Frankfürt-on-the-Main, crosses the Danube at Regensburg in Bavaria, and the Theiss at Szegedin in Hungary, proceeds along the northern frontier of Wallachia, and quits the continent at Lake Rassein in Bulgaria. At Constantinople the mean temperature for the year is 56°.3, for winter 40°, and for summer 72°. The annual quantity of rain is moderate over the entire peninsula, rarely exceeding 32 inches.

Geology.—The geology of Turkey has not been very accurately explored; but, so far as presently known, crystalline rocks cover almost the entire area bounded by the Balkans, Mount Pindus, and the basin of the Maritza, together with a somewhat extensive tract S. of the Gulf of Burgas. Silurian strata do not occur, but N.W. of Constantinople there is a small tract of upper palæozoic; another in the Balkan Mountains; and a third on the Danube, near Orsova. Secondary strata chiefly occupy the western provinces, together with a long belt N. of the Balkans, extending from the Morava to the Black Sea. Rumania, and the N. part of Servia and Bosnia, all lying in the basin of the Save and Lower Danube, belong to the tertiary series; as also the S.W. of Albania, from the Scombi to the G. of Arta, together with the basin of the Maritza.

Minerals.—Coal is nowhere found, except a small quantity in the mountains of Rumelia. Iron of the best quality is very abundant, but the mines in actual operation are few in number. Many of the veins which traverse the crystalline schists are highly metalliferous, and lead yielding a considerable percentage of silver has at different periods been wrought to some extent; but neither government nor people seem inclined to turn the mineral treasures of the country to good account. Other minerals are, gold in small quantities, copper, magnetic iron, marble, sulphur, salt, and alum.

Botany and Agriculture.—Turkey belongs entirely to Schouw's *third* phyto-geographic region, and its flora, therefore, corresponds to that of the other two great peninsulas of Southern Europe (see p. 82). A great difference, however, exists between the vegetation of the basin of the Danube and that of the provinces S. of the Balkans. In the former the forests consist of the pine, beech, oak (which yields the Valonia acorn, so valuable for tanning), lime, and ash, besides the apple, pear, cherry, and apricot, which cover the whole surface throughout extensive districts; whereas in the latter these trees are confined to the sides of the mountains, while the lower grounds exhibit the plane, maple, carob, almond, sycamore, walnut, and chestnut trees, as also the box, myrtle, laurel, and numerous evergreens. Large forests of fir and pine occur in Bosnia.

The olive thrives in the maritime plains of Albania, where also the

orange and citron are cultivated; and the vine in all the provinces, though in the valley of the Danube the fruit is deficient in saccharine matter. Little wine is produced for exportation, as it is so carelessly manufactured as to be unfit for shipping. While Candia and Cyprus were possessed by the Venetians, they supplied all Europe with the choicest dessert wines. Now, however, the total produce of the vintage of these islands does not amount to one-tenth of what it then was. Fruit-trees of numerous species are extremely abundant, especially in Albania; while the southern base of the Balkans, especially the plain of Adrianople, is remarkable for the abundance of its roses, from which the celebrated *attar* (otto of roses) is distilled. About 300,000 roses are required to produce an ounce of the oil, which, when pure, fetches an enormous price. The opium and other drugs for which Turkey is so famous, are confined to the Asiatic provinces. The system of agriculture pursued is of the rudest description, and only a small portion of the country (probably not more than a sixth) is under cultivation, though the soil is in most parts abundantly fertile, and better adapted for the growth of the cereals than any other part of Europe. Maize is cultivated in the S.; rice, cotton, rye, and barley in the central parts; wheat, barley, and millet in Moldavia.

Zoology.—The fauna of the Hellenic peninsula does not differ very materially from that of the Italian. It comprises 65 Mammals, 42 of which are carnivora, 14 rodentia, 8 ruminantia, and 1 pachyderm —viz., the wild-boar. The carnivora include the bat, bear, badger, marten, wolf, dog, fox, civet, and wild-cat. The rodents embrace the squirrel, beaver, hedgehog, vole, mouse, rat, and hare. The ruminants include the deer, antelope, chamois, and wild-ox. The lion, anciently found on Mount Olympus, has long been extirpated. Birds comprise 259 species, of which 31 are birds of prey, 15 climbers, 100 songsters, 12 gallinaceous birds, 64 waders, and 37 swimmers. The bustard and partridge abound in the valleys, and game is plentiful in the mountains. The Reptiles are 27 in number, embracing land-tortoises, lizards, frogs, and serpents. The Fishes of the Mediterranean, so far as presently known, are 444 in number, and nearly all occur on the W. and S. coasts. Tunny, coral, and sponge fisheries are characteristics of the Mediterranean. Trout and other fish are plentiful in the rivers; and leeches, which abound in the marshes, form an important article of exportation. The fishes and other inhabitants of the Black Sea are regarded as a colony from the Mediterranean, and though fewer in number, do not greatly differ in species.

Ethnography.—The population of European Turkey belongs, for the most part, to three distinct races—the Sclavonian, Greco-Latin, and Turkish.

The Sclavonians, who are by far the most numerous, people Bulgaria, Servia, Bosnia, Herzegovina, Montenegro, and Thessaly. The Greco-Latins occupy Wallachia, Moldavia, and the greater part of Albania, and also embrace about a million of Greeks proper in Rumelia and Thessaly. The large province of Rumelia, especially the part of it extending from the Vardar to the Black Sea, is chiefly inhabited by the Turks or Osmanlee, so named from Osman, the ancestor of the present ruling dynasty and founder of the Turkish Empire (A.D. 1298). The Osmanlee, who

are also called Ottomans, are of Asiatic origin, and are distinguished from other nations by their language, customs, and physical character. Though the dominant race in European Turkey, they are numerically a mere fraction of the population, probably not exceeding 1,500,000 persons. Besides the capital and the eastern part of Rumelia, they form a considerable fraction of the population of most of the large towns. The Turkish language, a rich and polished tongue, forms an important member of the great Finno-Tartarian family (see under "Asia"). The principal Sclavonic dialects spoken in Turkey are the Bulgarian, Servian, Bosnian, and Croatian; while the chief Greco-Latin tongues are the Romaic or Modern Greek, the Wallachian, which is little else than a corrupted Latin, and the Albanian or Arnaute, the probable representative of the ancient Illyrian. The Sclavonians and Greco-Latins, numbering together about 10,000,000, belong to the Greek Church; the Osmanlee, together with a large portion of the inhabitants of Albania, amounting in the aggregate to upwards of 4,000,000, are Mohammedans; while the remainder of the population are Roman Catholics, Armenians, Protestants, Jews, and Gypsies. Formerly the punishment of death was inflicted on any one renouncing the religion of the Korán; and though by a recent decree of the emperor all persecution on religious grounds is abolished, the bigotry of the Mohammedans remains unmitigated. Since the Crimean war, however, Scriptural truth has made considerable progress. The great mass of the people are almost wholly uninstructed; for though elementary schools are somewhat numerous, the knowledge communicated in them is of the most meagre description.

Literature.—The literature of the Turks is of ancient origin and highly respectable. During the reign of Othman and his immediate successors—that is, in the thirteenth and fourteenth centuries—it consisted for the most part of translations from the Arabic, Persian, Greek, and Latin, and more recently from the English, French, and German. These translations embraced works on history, geography, medicine, chemistry, mathematics, and military science. But their original or native literature is of a higher order than is usually supposed.

Ashik Pasha, the oldest Turkish poet of renown, lived during the reign of Osman. The reign of Bayazid II. was distinguished by the poets Nejati, considered the first lyric poet of his time; Mesihi, whose "Ode to Spring" is highly celebrated; and Baki (A.D. 1600), generally regarded as the greatest Turkish poet. The last century produced Nabi Efendi, Seyed Refet, and Raghib Pasha, called "the Sultan of the poets of Rum." Historians are very numerous, and some of them highly esteemed for their impartiality and the concise beauty of their style; as Ali, a contemporary of Baki, whose work, entitled 'Mines of History,' is one of the best sources concerning the earlier and middle periods of Turkish history. Other distinguished historians are Solak Zade, Haji Khalfah, Edris, Naïma, Rashid, 'Asim Subhi, and Wassif (A.D. 1500–1774). The most distinguished in Biography is Latifi, who wrote the lives of about 200 Turkish poets. Turkish literature has also been enriched by numerous works on morals, divinity, and philosophy. Their philosophy, which originated from the famous school of Bokhara, has a mystical character, and resembles in many points the speculative doctrines of Schelling, especially with regard to pantheism.—Penny Cyclop., vol. xxv.

Government and Finance.—The government is an hereditary ab-

solutism, the Sultan or Emperor being assisted by thirteen ministers, at the head of whom is the Grand Vizier.

On his accession to the throne, the Sultan, instead of being crowned like other European sovereigns, is girt with the sword of Osman, and made to swear that he will govern the empire in strict accordance with the principles of the Korán. The government of the provinces is administered by pashas, who are absolute in their respective territories, but hold office only during the pleasure of the Sultan. Persons of the meanest origin and basest character are frequently elevated to the office of pasha hence many of the provinces, especially in Asia, are reduced to deserts, from the rapacity and extortion of their rulers. Corruption, indeed, pervades every department of the state, whether civil, military, or ecclesiastical, and the entire empire threatens to fall speedily to pieces—a consummation which had long ere now been realised, except for the intervention of other European powers. The two principalities of Wallachia and Moldavia were united, in 1861, by a firman of the Sultan, and named Rumania. The reigning prince, who is styled Hospodar, is Charles I., of the House of Hohenzollern-Sigmaringen. The government is hereditary, and constitutional. The Sultan receives from Rumania an annual tribute of £40,000. Servia was ruled by native princes from 1815 to 1856, when it was placed under the protection of the great European powers, as a semi-independent state. The government is vested in the Prince, assisted by a council of five ministers, who are responsible to the nation, but who must be nominally recognised by the Sultan. In Montenegro the ruling prince is styled Hospodar, whose authority is permitted, but not recognised, by the Porte. The military force of Turkey, on the peace footing, numbers 460,000 men, including 75,000 auxiliaries from the three tributary provinces. Previous to the late war with Russia, the navy comprised 70 vessels, carrying 4000 guns. Most of these ships were destroyed by the Russians in 1853, and others foundered in the Black Sea. During the last ten years the navy has been entirely remodelled, and now embraces 185 ships of war (several of them ironclads, built in England), carrying 2370 guns. In 1870, the *Revenue* amounted to £16,000,000; the *Expenditure*, to £18,000,000; and the *Public Debt*, to £74,000,000.

Manufactures and Commerce.—Manufacturing industry is, for the most part, confined to the production of coarse articles for home consumption, as woollen and cotton stuffs, shawls, leather, firearms, together with dyeing and printing works. In the capital, however, and some of the chief provincial towns, silks, fine cottons, embroidery, filigree ornaments, and meerschaum pipes, are extensively produced. In 1874, the total value of the exports and imports amounted to £38,000,000. The former chiefly comprise grain, wool, raw cotton, silk, tobacco, attar of roses, and hides. In 1873, Turkey exported to Britain goods to the value of £6,068,993, the main articles being corn and raw cotton (about £1,000,000 each); receiving in return goods to the value of £7,733,342, two-thirds of which consisted of cotton cloth and yarn. She exports silks in great quantities to Marseilles, hides to Trieste, and attar of roses to various European countries. The principal articles imported, besides the above, are metallic goods and colonial produce. Constantinople is the chief seat of the foreign trade, which, together with the internal traffic, is mainly conducted by Greeks, Armenians, and English. The Revenue

amounts to £22,000,000, which is always greatly exceeded by the Expenditure, and a financial collapse is daily expected.

Internal Communication.—Very few of the *roads* are practicable for carriages, and horses or mules are generally employed for the conveyance of passengers and goods. On the most frequented lines of road are placed caravanserai or *khans*, which are large buildings with an open courtyard in the centre, for the accommodation of travellers. The Danube is the great highway of commerce for the northern provinces, especially since its several mouths came to be embraced within the boundary of Turkey. The navigation of its lower course is under the control of a European commission, appointed in 1856, which holds its sittings at Galacz. The only railways hitherto constructed are the line uniting Constantinople with Adrianople and Phillipolis; that from Varna to Rustchuk; and from Rustchuk to Jassy and Lemberg.

RUSSIA.

The Russian Empire is the largest state in the world, with the exception of the British, which considerably exceeds it. In addition to its European territories, which occupy more than a half of the continent, it embraces one-third of the vast continent of Asia. It is 4830 miles long from E. to W., along the Arctic circle, has an average breadth of about 1750 miles, and an area of nearly 8,000,000 sq. m.—being upwards of one-seventh of the land-surface of the globe. Its population is remarkably small in proportion to its prodigious extent, being only 83,260,000 persons, or one-sixteenth of the population of the globe. The British Empire, with an area of 8,616,000 sq. m., has 282,054,000 inhabitants; the Chinese Empire, with an area of 3,925,000 sq. m., has 425,000,000 inhabitants; and the United States of America, with an area of 3,603,884 sq. m., has a population of 38,925,000. The following table presents at one view the area and population of the different sections of this vast empire:—

	Area in English Square Miles.	Population in 1867.
Russia in Europe (including Finland and Poland,	2,110,317	71,716,690
Caucasia,	170,798	5,200,000
Siberia and Central Asia	5,585,979	6,342,000
Total,	7,867,094	83,258,690

RUSSIA IN EUROPE.

Position and Boundaries.—N., the Arctic Ocean and Norway; W., Sweden, the Baltic, Prussia, Austria, and Moldavia; S., the Black Sea and Mount Caucasus; E., the Caspian and Siberia, from which it is separated by the Ural river and mountains. Two governments (Perm and Orenburg) extend beyond the proper limits of Europe; but these, together with Transcaucasia, we shall here regard as belonging to European Russia. The strictly European portion of the empire lies between lats. 40° 20′ and 70° N., and between lons. 17° 50′ and 67° E., and so embraces nearly 30° of latitude, and 49° of longitude.

Moscow, the former capital (lat. 55° 42′, lon. 37° 39′), is situated almost exactly in the centre, and is on the same parallel as Nain in Labrador. Edinburgh, Copenhagen, Tomsk, and the middle of the peninsula of Kamtschatka; and on the same meridian as Onega, Kertch, Aleppo, Damascus, Medina, Gondar, and Quillimanè; but St Petersburg, the modern capital, is in the same latitude as C. Farewell, Lerwick, and Christiania. If Poland be omitted, the form of European Russia is a tolerably regular oblong, having its greatest length, from N. to S., about 2000 miles. The extreme breadth, in the latitude of Warsaw, is 1500 miles. The coast-line is about 4700 miles, being 1 mile of coast to every 448 m. of surface. This seaboard belongs to four distinct seas—viz., the Arctic Ocean, 2000 miles; the Baltic, 1000; the Black Sea and Sea of Azov, 1000; and the European coast of the Caspian, 700 miles. The northern seaboard, however, is comparatively useless, being frozen for nine months in the year; but the deficiency is compensated for by the numerous canals and navigable rivers with which Russia is intersected in all directions.

Area and Population.—Area 2,110,317 sq. m.; or, including Transcaucasia, 2,281,115. This area is only a little more than the fourth part of the entire empire, and yet it is seventeen times that of the British Isles, or about three-fifths of the entire area of Europe. In 1867 the population of European Russia was 71,716,690; or, including Transcaucasia, 76,916,000, being about 32 persons to the square mile. In 1725 the population of the entire empire was only 14,000,000; at the accession to the throne of the Emperor Nicholas, in 1825, it amounted to 51,000,000; while it is now more than 83,000,000. This single fact most vividly represents the aggressive policy of Russia.

Political Divisions.—European Russia, including the region beyond the Caucasus, is divided into 68 distinct governments and 3 territories. These are usually grouped into 10 main sections, which, though no longer regarded as political designations, are so familiar to the Russians themselves, and are so frequently mentioned in the geographical, historical, and statistical details of the present day, that an acquaintance with them is of great importance. The geographical position of these divisions is as follows:—

1. The Baltic Provinces, containing the capital, in the extreme W. of

the empire, bet. the Baltic Sea and the Gulf of Finland. 2. The Principality of Finland, in the N.W., and chiefly bet. the Gulfs of Finland and Bothnia. 3. Muscovy, or Great Russia, in the N., N.E., and centre. 4. Czarate of Kasan, bet. Muscovy and Siberia. 5. Czarate of Astrakhan, bet. Kasan and the river Ural. 6. Russian Poland, in the S.W., bet. Austrian and Prussian Poland. 7. West Russia, S. of the Baltic Provinces, and bet. Poland and Muscovy. 8. The Ukraine, or Little Russia, S. of Great Russia. 9. South Russia, bet. Little Russia and the Black Sea. 10. Caucasia, bet. the Black Sea and the Caspian. Muscovy formed the original nucleus of the empire; it was freed from the Tartar yoke by Ivan Basilowitz, the first Czar, in 1479; the kingdom of Kasan was conquered from the descendants of Zenghiz Khan in 1552; Astrakhan, formerly a Tartar kingdom, was annexed to Russia in 1557; the Ukraine, long a cause of strife between the Muscovites, Lithuanians, and Mongols, came into the possession of the Czars in 1686; the Baltic Provinces were seized from Sweden between 1700 and 1710, and Finland in 1809; South Russia was ceded by Turkey, partly at the Peace of Jassy in 1792, and partly at the Peace of Bucharest in 1812; the region of the Caucasus was wrested from Persia between 1723 and 1813; Russian Poland was annexed at the three successive partitions of that ill-fated kingdom, in 1772, 1793, and 1795; while Circassia has been subjugated during the last few years.

The Baltic Provinces.

St Petersburg or Ingria.—St Petersburg 667, Kronstadt 48 n. (Neva), Zarskoï-Selo 11 n. (Ischora).

Towns between 5000 *and* 10,000 *inhabitants.*—Gatshina, Narva.

Esthonia.—Revel 29 (G. of Finland).

Livonia.—Riga 102 (Düna), Dorpat 14 (Embach), Pernau 7 (Pernau).

Courland.—Mittau 28 (Treider-Aa), Libau 9 (W. coast).

Principality of Finland.

Finland.—Helsingfors 27 Abo 17 (G. of Finland).
Viborg, Uleaborg, Biörneborg, Wasa, St Michel.

Muscovy or Great Russia.

Arkhangel.*—Arkhangel 25 (Dwina).

* The Russian alphabet now in use consists of 36 letters, 12 of which are vowels, 3 semi-vowels, and 21 consonants. Not a few of the sounds thus represented are peculiar to the Sclavonic languages, and cannot be adequately represented by the Roman or German alphabets. Hence the attempts made to render them into the other European tongues have not been altogether successful, and not a little discrepancy has arisen between the various orthographies employed—so much so, indeed, as to render any attempt at rules for pronouncing Russian next to useless. Those we give refer exclusively to the dialect of Great Russia. The vowels are very differently pronounced, according as they have or have not the tonic accent. In this respect it greatly resembles the English.

e initial = *a* in *make*, as Ekaterinburg (*Ai-kat'er-in-burg*).

cz, either the same as *ts* in *mats*, or as *ch* in *church*, as Czar, Toropecz (*Tsar* or *Tsher*, *Tor-o-pets'* or *Tor-o-petsh'*).

j initial = *y* in *yonder*, as Jaroslav (*Yar-o-slav'*).

j, medial or final = French *j*, or *s* in *pleasure*, as Nijni-Novgorod (*Nish'ni-Nov-go-rod'*).

w = *v* in English, as Wolga, Twertza (*Vol'ga*, *Tvert'sa*).

Olonetz.—PETROZAVODSK 11 (Lake Onega), Olonetz 3 (Lake Ladoga).

Vologda.—VOLOGDA 19, Ustiug-Veliki 13 (Sukhona).

Novgorod.—NOVGOROD 18 (Volkhov), Borovitchi 12 (Msta).
Staraja-Russa, Tikhvin.

Jaroslav.—JAROSLAV 30, Uglitch 11, Rybinsk 15 (Volga).
Rostov.

Kostroma.—KOSTROMA 14 (Volga).

Pskov.—PSKOV 17 (Velikaja), Toropecz 6 (Toropa).

Tver.—TVER 30, Rshev 19, Ostashkov 10 (Volga), Torshok 16 (Tvertsa), Vishneï-Volotchok 14 (Tsna).

Vladimir.— VLADIMIR 13 (Kliazma).
Alexandrov, Pereslav, Murom, Melenki, Vixa.

Nijni-Novgorod.—NIJNI-NOVGOROD 42 (Volga), Arzamas 12 (Tiocha).
Potshinki, Murashkino, Pavlovo.

Smolensk.—SMOLENSK 23 (Dnieper), Viasma 13 (Viasma).
Dorogobusk, Roslavl.

Kaluga.—KALUGA 37 (Oka), Shisdra 10 (Shisdra), Borovsk 5 (Protva).

Tula.—TULA 58 (Upa), Bielev 7 (Oka), Jefremov 7 (Metscha).

Riazan.—RIAZAN 22, Kasimov 11 (Oka), Skopin 13 (Werda).
Pronsk, Mikhailov.

Moscow.—MOSCOW 620 (Moskva), Kolomna 16, Serpuchov 11 (Oka).
Borodino, Troitskoi-Monastere.

Orel.—OREL 44, Mzensk 14 (Oka), Jeletz 30, Livny 14 (Sosna-Bistraïa).
Katchev, Briansk, Sievsk, Bolkhov.

Kursk.—KURSK 27, Putivl 7 (Seim), Bielgorod 15 (Donetz), Staroï-Oskol 11 (Oskol).
Korotcha, Rylsk, Miropolie, Oboian, Novoï-Oskol.

Voronetz.—VORONETZ 41 (Vorona).
Birioutche, Javrov.

Tambov.—TAMBOV 36, Morshansk 16 (Tzna), Lipetsk 13, Kozlov 29 (Vorona).
Jelatom, Usman, Shatsk.

CZARATE OF KASAN.

Perm.—PERM 19, Kungour 12 (Kama), Ekaterinburg 22 (Isset), Nijni-Taglisk 27 (Tagil), Neviansk 18 (Neiva).
Irbit, Kushvinsk.

Viatka.—VIATKA 15 (Viatka).

Kasan.—KASAN 79 n. (Volga), Tchistopol 10 (Kama).

Simbirsk.—SIMBIRSK 25, Syzran 21 (Volga).

Penza.—PENZA 25 (Sura), Saransk 13 (Saranga, *aff.* Alatyr).
Krasno-Slobodsk, Nijni-Lomov.

CZARATE OF ASTRAKHAN.

Saratov.—SARATOV 93, Wolgsk 24, Dobovka 12, Khvalinsk 11 (Volga), Kusnetz 13 (Sura).
Kamyschin, Petrovsk.

Samara.—SAMARA 34 (Volga).

Orenburg.—ORENBURG 33, Uralsk 11 (Ural).
Troitsk, Tchelia binsk.
Astrakhan.—ASTRAKHAN 48 (Volga).
Ufa.—UFA 16 (Ufa).

KINGDOM OF POLAND.

Warsaw.—WARSAW 280 (Vistula), Lodz 34 n. (Bzura), Czentochov 13 (Wartha), Kalisch 14 (Prosna).
Radom.—RADOM 9 (Radomka).
Lublin.—LUBLIN 22 (Bistritza).
Plock.—PLOCK 17, Praga 8 (Vistula)
Augustowo.—SUWALKI 17 (Szezupa).
Wladislawaw, Kalwary, Augustowo.

WEST RUSSIA.

Kovno.—KOVNO 35 (Niemen), Rossieny 12 (Dubisa), Shavli 16 (Kovno).
Vilna.— VILNA 79 (Vilia).
Vitebsk.—VITEBSK 28, Polotsk 12, Dünaburg 28 (Düna).
Grodno.—GRODNO 26 (Niemen), Slonim 11 (Shtshara), Brzesc-Litovski 21 (Bug), Bialystock 17 (Bialy).
Minsk.—MINSK 36 n., Bobruisk 19 (Berezina), Pinsk 11 (Pina).
Mohilev.—MOHILEV 40 (Dnieper), Gomel 13 (Soj).
Volhynia.—JITOMIR 38 (Teterev), Staro-Konstantinov 12 (Slutch), Kremenetz 10 (Irva).
Lutsk, Vladimir.
Podolia.—KAMINIETZ 21 n., Mohilev 10 (Dniester), Balta 15 (Kodyma), Vinnitza 11 (Bug).

THE UKRAINE OR LITTLE RUSSIA.

Tchernigov.—TCHERNIGOV 11 (Desna), Nejin 18 (Oster), Glutchov 11 (Kleven), Starodub 11 (Babintza).
Berezna, Sosnitza.
Kiev.—KIEV 74, Tcherkasi 20 (Dnieper), Vasilikhov 12 (Stugma), Berditchev 53 n. (Teterev), Svenigorodka 11, Uman 14 n. (Smiuka).
Poltava.—POLTAVA 31 (Vorskla), Krementschug 23 (Dnieper), Perejaslav 10 (Trubesh), Priluki 11 (Sula).
Kobyliaki, Mirgorod.
Kharkov.—KHARKOV 87 (Kharkova), Starobielsk 13 n., Isium 11 (Donetz), Akhtyrka 15 (Vorskla), Lebedin 14, Sumy 13 (Psiol, *aff.* Dnieper), Bielopol 12 n. (Seim).

SOUTH RUSSIA.

Bessarabia.—KISHENAU 104 (Buik *aff.* Dniester), Akerman 29, Bender 22, Chotyn 19 (Dniester).
Kherson.—KHERSON 46 (Dnieper), Odessa 163 (S. coast), Nicolaïev 69 (Bug), Bobrinetz 10, Elizabetgrad 25 (Ingul).
Taurida.—SIMFEROPOL 17 (Salghir), Karasu-bazar 16 (Karask), Bakchi-Seral 11 n. (Alma), Sebastopol 8 (Tchernaya), Berdiansk 12 (Sea of Azov), Kertch 21 (Str. of Yenikaleh).
Balaklava, Kaffa, *Inkermann*.

Ekaterinoslav.—EKATERINOSLAV 20 (Dnieper), **Taganrog** 24 (Sea of Azov), Rostov 39, Nakhitchevan 11 (Don), Novomoskovsk 10 (Samara).

Don Cossacks.—NOVO-TCHERKASK 17 n. (Don).

CAUCASIA (Ciscaucasia and Transcaucasia).

Stavropol.—STAVROPOL 17 (Jachla), Kizliar 12, Mozdok 11 (Terek). Ekaterinograd, Georgievsk.

Ter. of the Kuban.—JEISK 17 (G. of Taganrog), Ekaterinodar 10 (Kuban).

Ter. of the Terek.—VLADI-KAUKAS 4 (Terek).

Tiflis.—TIFLIS 71, Elizabetpol 15, Akhalzikh 15 (Kur).

Erivan.—ERIVAN 12 (Zenghi), Alexandropol 15 n. (Arpar).

Shemakha.—BAKU 13 (Caspian), Nukha 21 (Kur), Shusha 20 n. (Aras).

Ter. of Daghestan.—DERBEND 11 (Caspian), Kuba 11 (Kuba).

Kutais.—KUTAIS 4, Poti (Rion).

Descriptive Notes.—Including the provinces of Transcaucasia, European Russia contained, at the last census, six towns of upwards of 100,000 inhabitants (St Petersburg, Moscow, Warsaw, Odessa, Kishenev, Riga); nine bet. 100,000 and 50,000 (Saratov, Vilna, Kiev, Nicolaïev, Kasan, Tiflis, Tula, Berditchev, Kharkov); fifty-one bet. 50,000 and 20,000; and ninety bet. 20,000 and 10,000.

St Petersburg, the capital of European Russia and of the whole Russian empire, situated on both sides of the Neva, and on several small islands formed by the river, was founded by Peter the Great in 1703. It is chiefly built of wood, but the palaces and public buildings are massive stone erections. Its commerce is extensive with all parts of the world: the annual imports are valued at £3,000,000, and the exports at £2,000,000; and there is regular steam-communication with all the principal ports of Europe. The low islands of the Neva are strongly fortified, and the city is defended by the impregnable fortress of **Kronstadt**, the principal naval station of the empire. **Zarskoi-Selo**, the Versailles of Russia, contains the summer residence of the Czar. **Revel** or **Reval**, a strongly-fortified seaport town, founded by Valdemar II., King of Denmark, in 1218, was taken from Sweden by Russia in 1710, and was at one time the great emporium of the Hanseatic League for the trade with Novgorod. **Riga**, a large, fortified, and commercial city near the mouth of the Düna, was founded in 1200, and remained long one of the chief Hanseatic towns. It contains several colleges, a public library, and many scientific establishments. It exports largely flax and hemp. **Dorpat** contains a celebrated university, founded by Gustavus Adolphus in 1632. **Mittau**, noted for its gymnasium and literary societies, has manufactures of linen and soap. **Helsingfors**, the capital of Kinland since 1819, is the seat of a university which has a library of 80,000 vols.; it has a harbour suited for line-of-battle ships, and defended by the strong citadel of *Sweaborg*; trade in timber, corn, and fish. **Abo**, the former capital of Finland, and the cradle of its Christianity, was at one time a celebrated and flourishing town, but was almost wholly ruined by fire in 1827. **Arkhangel**, the most important city in the north of Russia, was the only seaport in the empire previous to the founding of St Petersburg, after which it began to decline;

but it still remains the emporium of the trade with Siberia and the northern governments. It is strongly fortified, and the seat of a depot of the Russian military marine. **Petrozavodsk** has two spacious docks, an imperial cannon-foundry, powder-mills, and manufactures of silks. **Vologda**, a place of considerable trade, with a large annual fair. **Novgorod**, at one time the capital of an independent state, and a great commercial emporium, has fallen into insignificance since the founding of St Petersburg in 1703. **Jaroslav**, an important manufacturing town on the Volga. **Kostroma** and **Pskov**, celebrated for the manufacture of russia leather. **Tver**, an important fortified town on the Volga, and on a canal which establishes a connection between the Baltic and Caspian, possesses an extensive trade. **Vladimir**, the capital of the Grand-Duchy of Russia from 1157 to 1328, has a trade in fruit, and manufactures of linen and leather. **Murom** and **Vixa**, with valuable iron-mines, the latter being among the most extensive in Russia. **Nijni-Novgorod**, at the confluence of the Oka and Volga, noted for its great annual fair, the largest in the world, which begins on the 1st of July, and continues for eight weeks, at which time the population amounts to a quarter of a million: merchants from all parts of Europe and Asia attend, and the sales are valued at £22,000,000 sterling. **Smolensk** was a place of great importance as early as the ninth century; was taken by the French army after the famous battle of Smolensk, and a great part of it reduced to ashes. **Viasma**: here the French army was defeated by the Russians in October 1812. **Kaluga**, one of the most important manufacturing towns in the empire, the manufactures consisting of muskets, cloth, oil, paper, cotton, leather, &c. **Tula**, the Birmingham of Russia, and the great seat of its iron manufactures; here vast quantities of arms are made annually, giving employment to 20,000 persons. **Moscow**, formerly the capital of Russia, and still the second city in the empire, greatly surpasses St Petersburg in the extent of its commerce, having water-communication with all the principal cities and ports in the empire. The view of the city from a distance excites the admiration of all travellers: the innumerable towers, some with cupolas, others rising in the form of minarets, and the many gardens and trees intermixed with houses, give it quite an Oriental appearance. Its manufactures of cottons, woollens, silks, and carpets are immense, employing 40,000 weavers. Moscow was founded in the middle of the twelfth century; was sacked by the Moguls in 1233 and 1293; and burned by the Russian general after his defeat by the French army at *Borodino*, Sept. 7, 1812, thus compelling Napoleon to commence his disastrous retreat. **Orel**, the entrepôt for the commerce between N. and S. Russia. **Jelets** has extensive iron-mines in the vicinity. **Kursk** and **Voronetz** are important manufacturing and commercial towns. **Tambov**, strongly fortified, has a college and a military school for nobles, and an active general trade. **Perm** has a great trade in metallic products, which are wrought extensively in the neighbourhood, and is the principal emporium of the trade between Russia and China. **Ekaterinburg**, on the Asiatic side of the Urals, is the centre of all the great ironworks belonging to the Crown. The inhabitants are largely engaged in mining, and in polishing topazes, amethysts, jaspers, and other precious stones obtained in the Urals. **Viatka** carries on great trade with Astrakhan, Arkhangel, and the capital, and has manufactures of iron machinery. **Kasan**, the great entrepôt of the commerce between Siberia, Bokhara, and European Russia, has been long celebrated for its educational establishments. **Simbirsk** maintains a flourishing trade in corn and fish. **Penza** has manufactures of leather and soap; iron, chalk, sulphur, and vitriol are found in its vicin-

ity. **Saratov**, a large, fortified, commercial and manufacturing city on the Volga. **Samara**, the capital of a government of same name, contains some ironworks, and a trade in cattle, sheep, and fish. **Orenburg**, a fortified city on the Ural, carries on an extensive trade with Bokhara and other parts of Central Asia. **Astrakhan**, at the mouth of the Volga, is a thriving commercial city, with manufactures of cotton, silk, leather, and shagreen: from its favourable situation it has become the entrepôt between Russia, Persia, and India. **Ufa**, cap. of new government of same name, is a walled town with 16,000 inhabitants. **Warsaw**, the capital of Poland since 1566, and the great entrepôt of its commerce, is in point of population the third city in the empire, and contains the largest Jewish population of any city in Europe. Warsaw is strongly fortified, is one of the principal stations of the Russian army, and the scene of unparalleled atrocities on the part of the Russians during the Polish insurrection of 1863. **Kalisch**: near it the Poles defeated the Swedes in 1706. **Lublin** has extensive cloth-manufactures and trade in corn and Hungarian wines: also three large fairs, each lasting a month. **Plock** has manufactures of leather and skins, and an active transit trade. **Kovno** is famous for its mead, has an active trade in corn, and some linen-weaving. **Vilna**, the former capital of Lithuania, is a large town with a considerable trade. **Vitebsk**, built of wood and enclosed by walls, has a college for nobles, and manufactures of woollen cloth and leather. **Grodno**: here Stanislaus, last king of Poland, abdicated his crown in 1795. **Minsk** carries on a large trade in timber, iron, and russia leather, and has manufactures of woollen cloths and hats. **Moghilev** conducts a large export trade in agricultural products. **Jitomir** has a flourishing trade in woollens, silks, linens, salt, and agricultural produce. **Kaminiets**, a fortified town, containing a theological seminary. **Tchernigov**, a very ancient town, containing numerous buildings of antiquarian interest. It was taken by the Tartars in 1239, after an obstinate resistance, and again by the Poles in 1617. **Kiev**, once the capital of Russia, is an ancient and fortified city, with an arsenal and a richly-endowed university. It is noted for its ancient catacombs. **Berditchev** has great commerce, and four annual fairs, at which goods to the value of £600,000 are disposed of annually. **Poltava** or **Pultawa** contains a monument to Peter the Great, who here signally defeated Charles XII. of Sweden, 27th June 1709. **Kharkov** or **Kharkova** has numerous manufactures and extensive trade; its fairs are among the most important in the Ukraine. **Kishenau** has extensive manufactures of woollen cloths. **Akerman**, a fortified town on the Dniester, has large exports of salt, obtained in the adjacent lakes. Here was concluded, in 1826, a famous treaty, exempting the Danubian provinces (Moldavia and Wallachia) from all but a nominal dependence on Turkey. **Bender**, taken and stormed by the Russians in 1770 and 1809: here Charles XII. resided for seven years after the battle of Poltava. **Chotyn**, formerly an important border-fortress of the Turks, and frequently the object of struggles between them and the Russians. **Kherson**, a fortified town, near the mouth of the Dnieper, and a place of great trade: near it is the tomb of Howard the philanthropist, who died here January 20, 1790. **Odessa**, a strongly-fortified seaport city, and the great commercial emporium for the Black Sea and Danube traffic, was founded in 1792. Its trade chiefly consists in the exportation of grain and in importing foreign goods. It has several hundred large grain-magazines, and is now the third commercial city in the empire: exports and imports valued at £5,000,000 annually. It narrowly escaped bombardment in the late war with Russia. **Nicolaiev**, a fortified town at the con-

fluence of the Ingul and Bug, the station of the Russia Black Sea fleet, and, since the destruction of Sebastopol, the principal naval arsenal of Russia in the Black Sea. **Simferopol** is the residence of all the Russian authorities in the Crimea. **Bakchi-Serai**, near the Alma, a small river, on whose banks the allied army obtained a brilliant victory over the Russians, 20th September 1854. **Sebastopol**, at the mouth of the Inkermann, formerly the Gibraltar of Russia, was founded by the Empress Catharine in 1787, and made the chief naval arsenal for the Russian fleet. Immediately after Turkey declared war against Russia, a large Russian squadron issued from Sebastopol and destroyed the greater portion of the Turkish fleet at Sinope, November 13, 1853, when 4000 Turks perished. To avenge this outrage, and to check the numerous encroachments of Russia, England and France declared war against Russia in the following March. They sent one fleet to the Baltic, which destroyed Bomarsund, &c.; and another, together with a large military force, against Sebastopol. The landing was effected at Old Fort, about thirty miles south of Eupatoria, on the 14th September 1854; and on the 20th September, 25th October, and 5th November following, were fought the memorable battles of the Alma, Balaklava, and Inkermann: on the 8th September, 1855, the Malakoff Tower was taken, and the day following the Russians evacuated Sebastopol, which was reduced to a heap of ruins by the allied army. **Ekaterinoslav**, founded in honour of Catharine II. of Russia, in 1787, has manufactures of cloth, and an important annual wool fair. **Taganrog**, the great outlet for the produce of the countries drained by the Don. **Stavropol**, cap. of government of same name, and of all Ciscaucasia (which consists of one government and two inorganised territories), is a fortified town with some manufactures of soap and leather. **Kizliar**, a fortified town on the Terek, with an active trade in wine. **Jiesk**, capital of the territory of the Kuban, founded in 1848, is a modern seaport town on the Sea of Azov. **Vladi-Kaukas**, a town and fortress at the N. entrance of the Dariel Pass, the principal pass of the central Caucasus. **Tiflis**, formerly the capital of Georgia, and now of Transcaucasia, is well fortified, and is the great mart for the interchange of Russian, Turkish, and Persian produce. **Akhalzikh**, a fortified town taken by the Russians from the Turks, with trade in silk and honey. **Erivan**, formerly capital of the Persian province Azerbijan, situated on the great caravan-route between Tiflis and Erzroum, has a considerable transit trade. It has a strong citadel, taken by the Russians in 1804. **Alexandropol**, a strong fortress at an elevation of 5860 feet, where the cold is often intense. **Baku**, capital of province Shemakha, has the best harbour on the W. side of the Caspian: it exports vast quantities of naphtha and salt from the Apsheron peninsula. Within 10 m. of this town is Atash-ja ("sacred flame"), the place of pilgrimage of the fire-worshippers of Asia. Here the soil is impregnated with sulphur and inflammable gas. **Derbend**, a place of great strength and importance, being situated at the entrance of a defile in the Caucasus, called by the ancients the Albanian Gates.

Capes, Peninsulas, and Islands.—Zelania, N. of Novaia Zemlia; Kanin and Sviatoi, on either side of the entrance to the White Sea; Hango Head, S.W. of Finland; Domesnes, N. of Courland; Kinburn Point, N.W of Taurida; Chersonese, S. of the Crimea; Apsheron, the E. extremity of Mount Caucasus. The only important PENINSULAS are Shemokhovskaia, bet. the White Sea and the G. of Tcheskaia, and the Crimea, in the S. of Taurida. ISLANDS.—Vaigatch and Novaia Zemlia, N.E. of Arkhangel; Spitzbergen and the Seven

Sisters, 10° N. of Norway; Kolguev, between Vaigatch and Cape Kanin; Solovetskoï group, in the White Sea; Aland group, S.W. of Finland; Kronstadt, near the head of the Gulf of Finland; Dago, Oesel, Worms, Nuko, and Moen, W. of Esthonia.

Seas, Gulfs, and Straits.—Kara Sea, N.E. of Arkhangel; Vaigatch Str., bet. Vaigatch I. and the mainland; Karskaia Str., bet. Vaigatch and Novaia Zemlia; Tcheskaia G. and White Sea, in the N. of Arkhangel; Varanger Fiord, bet. Arkhangel and Finmark; the Baltic, bet. Russia and Sweden; G. of Bothnia, bet. Finland and Sweden; G. of Finland, bet. Finland and Esthonia; G. of Riga, bet. Esthonia and Courland; Black Sea, bet. Russia and Asia Minor; G. of Odessa, S. of Kherson; G. of Perekop, N.W. of the Crimea; Sea of Azov, bet. Taurida and territory of the Kuban; Str. of Kertch, uniting the Black Sea and Sea of Azov; Caspian Sea, separating Russia from Persia and Independent Tartary.

Mountains.—Russia is the least mountainous country in Europe; for though two immense mountain-chains skirt its E. and S.E. frontiers, the latter containing several summits greatly loftier than Mont Blanc, the whole of the interior and west consists of one enormous plain, which extends from the Arctic Ocean to the Black Sea, and from the Baltic to the Caspian, with the single exception of the Valdai Hills, at the sources of the Volga.—(See under "Europe," p. 70.)

The Valdai Hills, in the government of Novgorod, divide the waters flowing into the Baltic from those entering the Caspian. Highest summit, between Ostashkov and Valdai, 1100 feet.

The Ural Range, separating European Russia from Siberia, and the basins of the Petchora and Volga from that of the Obi. Reckoning, as is usually done, from Orenburg to the Arctic Ocean, they traverse 18° of latitude; but as they in reality commence near the Sea of Aral, and have an insular prolongation in Vaigatch and the two islands of Novaia Zemlia, they extend over 30° of latitude, or 2000 English miles. The highest summits are the following:—Konjak-Ofski (lat. 59° 55′), 5397 ft.; Obdorsk (lat. 67°), 5286 ft.; Taganaï (lat. 55° 20′), 3592 ft. The Urals nowhere attain the limit of perpetual congelation, and are usually of very moderate elevation. They are covered with dense forests, and are rich in gold, precious stones, and other valuable minerals. The mountain-passes are not remarkable; the only good carriage-road leads from Perm to Ekaterinburg.

The Caucasus.—This vast chain, the loftiest in Europe, extends from Cape Apsheron, in the Caspian, to the Peninsula of Taman, between the Black Sea and Sea of Azov, being a total distance of 750 miles. They separate Europe from Asia on the S.E., and the basins of the Kuban and Terek from those of the Kur and Rion. Mount Elburz, the culminating-point of Europe, 18,571 ft.; Mount Kazbek (lon. 44° 20′), 16,523 ft.; elevation of line of perennial snow, 11,000 ft. Cultivation of grain extends from 7000 to 8000 ft. The existence of glaciers is uncertain. The range is covered with timber to a great height. The north side is abrupt and precipitous, but the south side descends by a succession of terraces. The Caucasus contain no active volcanoes, but they are frequently visited by earthquakes. They consist mainly of crystalline rocks; while the principal minerals are copper, lead, iron, sulphur, and coal.

The only *Mountain-passes* practicable for carriages are—The Dariel Pass, from Mozdok to Tiflis, by the valley of the Terek, 8000 ft. high; and the Pass of Derbend, on the east coast.

The *Mountains of the Crimea* are a mere prolongation of Mount Caucasus: culminating-point, Tchatir-Dagh, 5000 ft. high.

River-Basins.—The river-system of Russia belongs to 4 distinct river-basins—viz., those inclining to the Arctic Ocean, the Baltic, the Black Sea, and the Caspian. The two former are the least extensive, although possessing the greater number of rivers, the principal of which are the Petchora, Mezen, Dwina, Neva, Düna, and Niemen. The two latter are represented by the Dniester, Dnieper, Don, Kur, Volga, and Ural. These 12 basins comprise ⅔ of the area of Russia, and 57 out of the 71 capitals, or nearly ⅘ of the entire number. Three basins (Neva, Dnieper, and Volga) contain 39 capitals, or about ½ of the whole, and drain an area of 822,000 sq. miles, being considerably over ¼ of the area of Russia. The basin of the Volga alone is 527,000 sq. miles.—(For the areas of the other basins, see pp. 72-76.)

Table of Rivers and Towns.—In the following table 168 rivers are enumerated, 33 of which are principal rivers, entering the sea immediately, the remainder being their affluents; and the total number of towns exceeding 5000 inhabitants, contained in their basins, is 320.

Basins inclined to the Arctic Ocean.

Rivers.	*Towns.*
Petchora,	*Usa.*
Mezen,	*Mezen.*
Dwina and Sukhona,	Arkhangel, Ustiug-Veliki; Vologda.
Jug,	Ustiug-Veliki.

Basins inclined to the Baltic.

Kemi (L. Kemi),	*Tornea*, n., *Kemijoki.*
Ulea,	Uleaborg.
G. of Bothnia,	*Gamla-Carleby*, Wasa, *Christinestad*, *Björnsborg*, *Nystad.*
Lapoki,	*Ny-Carleby*, *Tamerfors*, Tavastehuus.
G. of Finland,	Abo, Helsingfors, *Wiborg.*
Neva,	Kronstadt, n., St Petersburg, *Olonetz.*
Ischora, *l*	Zarskoi-Selo, *Gatshina.*
Woxen,	*Kexholm*, St Michels, Kuopio.
Volkhov (L. Ilman),	Novgorod.
Msta,	Borovitchi.
Lovat,	*Staraja-Russa*, n.
Sias, *l*	*Tikhvin*, n.
Svir (L. Onega), *l*	Petrozavodsk.
Luga,	*Burg*, *Luga.*
Narova (L. Narva, Peipus),	Pskov, n.
Embach, *l*	Dorpat.
Velikaja,	Pskov.
G. of Finland,	Revel, *Hapsal*, *Arensburg*, n.
Pernau,	*Pernau.*
Boulder Aa,	Riga, n.
Düna,	Riga, Dünaburg, Polotsk, Vitebsk.
Treider Aa, *l*	Riga, Mittau.
Disna, *l*	*Vidzy.*
Toropa,	Toropecz.
Vindau,	*Goldingen.*
W. Co. Courland,	Libau.
Niemen,	Memel, Tilsit, Kovno, Grodno.
Szezupa, *l*	*Wladislawaw*, *Kalwary*, Suwalki.
Dubisa,	Rossieny.
Niewieza,	*Keidawn.*
Vilia,	Vilna.
Shtshara, *l*	Slonim.

N.B.—For the Pregel, Vistula, &c., see under "Austria."

Basins inclined to the Black Sea.

Rivers.	*Towns.*
Dniester,	Akerman, Bender, Mohilev, KAMINIETZ, n., Chotyn, Sambor.
Bulk,	KISHENAU.
Sered, *l*	Tarnopol.
Zelota, *l*	*Brezezany*.
Bistrica,	Stanislawaw.
Tiszmanicka, Drohobicz.	
Co. of Kherson, Odessa.	
Bug,	Nicolaiev, Vinnitza.
Ingul, *l*	Bobrinetz, Elizabetgrad.
Smiuka, *l*	Svenigorodka, Uman, n.
Kodyma,	Balta.
Sab, *l*	*Lipovetz*.
Row,	*Bar*.
Dnieper,	KHERSON, *Alexandrovsk*, EKATERINOSLAV, Krementschug, Tcherkasi, KIEV, MOHILEV, SMOLENSK, *Dorogobusk*.
Samara, *l*	Novomoskovsk, *Pavlograd*, n.
Vorskla, *l*	*Kobyliaki*, POLTAVA, Akhtyrka.
Psiol, *l*	Lebedin, Sumy, *Miropolié*, Obaian.
Khorol,	*Khorol*, *Mirgorod*.
Sula, *l*	Priluki.
Trubesh, *l*	Perejaslav.
Stugma,	Vasilikhov.
Desna, *l*	KIEV, TCHERNIGOV, *Berezna*, n., *Sosnitza*, *Briansk*.
Oster, *l*	Nejin.
Seim, *l*	Bielopol, n., *Rylsk*, KURSK Kleven, Glutchov, n.
Sudost,	*Pogar*.
Babintza, Starodub.	
Nerussa, *l*	*Trubtchevsk*, *Dmitrovsk*.
Sieva, *l*	*Sievsk*.
Sueja, *l*	*Briansk*, *Karatchev*.
Teterev,	JITOMIR, Berditchev, n.
Pripet,	*Mozyr*, Pinsk, n.

Rivers.	*Towns.*
Slutch,	Staro-Konstantinov.
Styr,	*Lutsk*, Brody.
Irva,	Kremenetz.
Soj, *l*	Gomel, *Tcherikov*, *Mstislavl*.
Iput, *l*	*Suraj*.
Ostr, *l*	*Roslavl*.
Berezina,	Bobruisk, MINSK.
W. Co. Crimea, Eupatoria.	
Alma,	Bakchi-Serai, n.
Tchernaya,	Sebastopol, *Inkermann*.
S. Co. Crimea, *Balaklava*, *Kafa*.	
S. of Yenikaleh, Kertch.	
Salghir,	SIMFEROPOL.
Karask,	Karasu-bazar.
Sea of Azov,	Berdiansk, *Mariopol*, Taganrog, *Azov*.
Don,	*Azov*, Nakhitchevan, Rostov, NOVO-TCHERKASS. n., *Lebedian*.
Manitch, *l*	Staroi-Tcherkask.
Egorlik, *l*	STAVROPOL, n., on the Jachla.
Aksai,	Novoi-Tcherkask.
Donetz,	Starobielsk, n., Isium, *Voltchansk*, Bielgorod.
Bakhmuta, *Bakhmut*.	
Oskol, *l*	*Novoi-Oskol*, Staroi-Oskol.
Kharkova, KHARKHOV.	
Uda,	*Zolotchev*.
Korotcha, *Korotcha*.	
Medviditsa, *l*	*Petrovsk*.
Bitiug, *l*	*Bobrov*.
Verona, *l*	VORONETZ, *Usman*, n., Lipetsk, Kozlov
Sosna - Bistrala,	Jeletz, Livny.
Metscha,	*Jafremov*.
Kuban,	EKATERINODAR.
W. Co. Circassia,	ANAPA, *Pitzunda*, *Sukum-Kaleh*.
Rion,	KUTAIS, *Poti*.

Basins inclined to the Caspian.

Kur,	TIFLIS, *Shemaka*, n., Elizabetpol, n., Akhalzikh, n., Nukha, n.
Aras,	Shusha, n., ERZEROUM, n.
Kara-Su,	*Ardabil* (Persia).
Vergush, *l*	Shusha.
Kotur,	Khoi (Persia).
Mahou,	*Bayazid* (in Turkish Armenia).
Zenghi (L. Erivan), *l*	ERIVAN.
Arpar or Kara, *l*	Alexandropol, n., Kars.
Alazon, *l*	*Telavi*.

W. Co. Caspian,	BAKU, DERBEND, TARKI, n.
Kuba,	Kuba, *Kuigat*.
Sulak,	*Akhulgo*, *Kurata*.
Terek,	Kizliar, Mozdok, *Daried*.
Volga,	ASTRAKHAN, *Tchernoiyar*, Dubovka, *Kamyschin*, SARATOV, Wolgsk, Khvalinsk, Syzran, SAMARA, SIMBIRSK, KASAN, *Murashkino*, NIJNI-NOVGOROD, KOSTROMA, JAROSLAV, Rybinsk, Uglitch, TVER, *Staritza*, Rahev, Ostashkov.

Basins inclined to the Caspian (continued).

Rivers.	*Towns.*
Samara, *l*...	*Buzuluk.*
Kama, *l*....	Tchistopol, Kungour, n., Perm.
Viatka,...	Viatka.
Ufa, *l*.....	Ufa.
Sura,.....	Penza, Kusnetz.
Alatyr, *l*..	*Potshinki.*
Saranga,	Saransk.
Oka, ..,.....	Nijni-Novgorod, *Pavlovo, Murom, Melenki, Jelatom*, Kasimov, Riazan, Kolomna, Serpuchov, Kaluga, *Bielev, Bolkhov*, n., Mzensk, Orel or Orlov.
Kliazma, *l*	Vladimir.
Kutchura, *l*	*Troitskoi-Monasters.*
Tiosha,...	Arzamas.
Moksha,...	*Krasno-Slobodsk, Nijni-Lomov.*
Tzna, *l*	Morshansk, Tambov.
Pronia,...	*Pronsk, Mikhailov.*
Werda,	Skopin.
Moskva, *l*	Kolomna, Moscow, *Borodino.*
Nara, *l*...	Serpuchov.
Protva, *l*..	*Borovsk*, Vereja.
Luaha,...	*Maloi-Jaroslavitz.*
Shisdra, *l*	Shisdra.
Viasma, *l*	Viasma.
Upa,.....	Tula.
Kostroma, *l*	Kostroma, *Galitch*, n
Kotoroath,..	Jaroslav, *Rostov.*
Sheksna (L. Bielo),	*Bielozersk.*
Nerl,.....	*Pereslav.*
Jakhrama,...	*Dmitrov.*
Dubna,...	*Troitskoi.*
Tvertza, *l* ..	Tver, Torshok.
Tana, *l*....	Vishnei-Volotchok.
Ural, ...	Uralsk, Orenburg, *Orsk.*

Lakes.—Russia abounds in lakes, more especially in the north-western provinces. In general they arrange themselves in clusters around Lake Ladoga, the largest fresh-water lake in Europe (area 7150 sq. m.), and, along with it, discharge their surplus waters into the Gulf of Finland. For a full list of the lakes of Russia and of the rivers that drain them, see p. 76. Of *salt-water Lakes*, the Caspian is by far the largest in the world, having an area of 178,866 sq. m.; and even this is probably but a small part of the area it occupied in remote times, when it probably communicated with the Black Sea, Sea of Aral, and the other salt-water lakes of the central Basin of Continental Streams.

Climate.—The watershed inclining to the Arctic Ocean is much colder than in corresponding latitudes in Scandinavia, the surface of a large portion of it being constantly frozen, notwithstanding the continual presence of the sun for many weeks' duration. Beyond the arctic circle mercury freezes in the month of September. Even at St Petersburg (lat. 59° 58′) the thermometer sinks in January to 22° below zero; while in July it rises to 90°; mean temperature, 38°.7 Fahr. South of lat. 58° the mean temperature varies from 40° to 55°; the winters are much shorter than on the northern slope, but almost equally severe, while the summers are long and hot. Notwithstanding these striking extremes of temperature, the climate of Russia is favourable to health; diseases are not common, and human life very frequently attains to its maximum length. Annual fall of rain at St Petersburg, 16 inches; number of rainy days, 171. In the basin of the Volga the rainfall amounts to only 15 inches.

Geology and Minerals.—The geology of Russia was until recently very uncertain, and the more accurate information now possessed is

mainly due to Sir Roderick Impey Murchison and his coadjutors. For the particulars, however, we must refer to the "Geology of Europe," p. 79.

Minerals are numerous and very valuable, especially in the governments of Perm and Orenburg, on both sides of the Ural Mountains, which are richer in valuable minerals than any other mountain-system in Europe. Numerous mines of gold, platinum, copper, magnetic iron, and salt are wrought, giving employment to a large and flourishing population. In Perm alone 100,000 persons are employed in mining operations. The greatest mineral wealth of the chain is on the eastern side, between lats. 54° and 60°; but the western side furnishes marl, gypsum, limestone, sulphur, and copper. Iron abounds in the southern provinces. Coal is deficient in the Urals, but prevails extensively in southern Poland, and, on the Oka, is found associated with iron. Lignite and brown-coal are found in the Crimea. In 1844 enormous deposits of coal were discovered in the government of Moscow; while the coal-field on the Donetz, 100 miles in length, has long been celebrated. Amber is found in Poland and Lithuania; iron, lead, sulphur, arsenic, nitre, in Finland; salt and alum in many places: diamonds of small size, and other precious stones, in the Urals.

Botany and Agriculture. — Russia is wholly included within Schouw's *first* and *second* phyto-geographic regions, which are, for the most part, separated by the arctic circle. The first, or farthest N., is the home of the arctic alpine flora, described under "Europe," p. 81. The second embraces all the rest of Russia and Central Europe (see p. 82). The botany of Russia has not been fully investigated, and we cannot yet state how many species of plants it embraces. Finland, however, is said to contain about 1000 flowering plants. The most peculiar feature of its botany is found in its immense natural forests, which cover about 2-5ths of its entire surface. These abound chiefly in the central districts, between 52° and 60° lat., and are of most essential value to the inhabitants, affording fuel, shelter from the biting winds, and numerous useful articles, as timber, pitch, tar, turpentine, and potash. The trees which most frequently occur are the pine, Scotch fir, and other coniferous trees. The northern limit of the coniferæ passes through the N. of Lake Imandra in Lapland, Cape Sviatoï, and the confluence of the Petchora and Ussa. The largest forest in Europe extends from the Mezen to the Onega, and covers an area greatly larger than the British Isles. The oak extends as far N. as Abo, Novgorod, Vladimir, Simbirsk, and Orsk; the vine to lat. 47½°; the beech to a line drawn from the mouth of the Vistula, south-eastward to the mouth of the Terek; the olive and orange refuse to grow in any part of European Russia except the Crimea, in the southern valleys of which the vine and mulberry, the olive, fig, pomegranate, and orange, all flourish in the greatest profusion.

Over the whole empire agriculture is in its rudest state; the soil is various, but generally excellent; and greatly more corn is raised than is required for home consumption. The upper basin of the Volga is the most fertile part of Russia; and the governments of Nijni-Novgorod, Penza, Kasan, and Simbirsk may be denominated the granary of the

empire. Here the soil consists of a rich black mould of decayed vegetable matter, and is of surprising fertility. The Ukraine is also very fertile, and exports enormous quantities of wheat. Forests cover a great part of the surface of the Polish and Baltic provinces, but the former produce cattle and great quantities of corn. Kasan is level and fertile, abounding in corn and forests of oak. Southern Russia and Astrakhan consist chiefly of *steppes*, or immense deserts, which are divided by the Don into two regions: the high steppes, lying westward, are characterised by the absence of trees, and by long coarse grass and wild-flowers in spring and early summer, but as the heat increases, they assume the appearance of a sunburnt waste. The low steppes to the E. are much more sterile, having a saline, sandy soil, interspersed with intensely salt lakes. The steppes are inhabited by nomadic tribes, who keep large flocks of camels. The vast region extending from the Arctic Ocean to lat. 64° is a swamp in summer, and is covered with ice for nine months in the year. The grains most generally cultivated are rye and oats, the former being the principal article of food used by the inhabitants. Rye extends to lat. 65°, barley to 67°, oats to 62°, wheat to 60°, millet to 55°, maize to 48°; while rice is cultivated only in Transcaucasia. The northern limit of the cereals is marked by a line passing N. of lakes Enara and Imandra, and S. of the town of Mezen, meeting the Urals in lat. 60°. The extent of land under cultivation bears but a small proportion to the whole area of the country. Hemp and flax are chiefly cultivated on the upper Volga; tobacco in the Ukraine; the vine in the Crimea, Odessa, Caucasia, and the lower basins of the Don and Volga; and rice, silk, cotton, madder, melons, pomegranates, and even the sugar-cane, in Transcaucasia.

Zoology.—No accurate statistics have been furnished of the fauna any more than of the flora of Russia, notwithstanding the solid foundations for both departments of knowledge laid by the illustrious Pallas; but it is interesting to know that the isotherm of 41° Fahr. (which divides Northern from Central Europe, and which passes through Trondhjem, Stockholm, Kaluga, Penza, and Orenburg) has on the N. side of it 31 species of carnivora, 212 birds, 10 reptiles, and 24 cetacea. In the higher latitudes the reindeer is a source of wealth; the dreary regions of Novaia Zemlia are frequented by the great white bear, which seldom passes beyond the limits of perennial snow; the bison is found near the sources of the Narew; in the northern forests there are elks, several species of deer, hares, and wild hogs. The wild animals that are hunted for their skins are very numerous, as bears, gluttons, badgers, wolves, foxes, martens, polecats, weasels, ermines, otters, squirrels, and marmots. In the steppes are found wolves, foxes, wild hogs, wild asses, wild horses, and other cattle. The domestic animals of England are found in most parts of Russia. Horses are very numerous in the central and southern provinces, as also black cattle and sheep of various species; camels and buffaloes in the steppes, and dromedaries in the Crimea. Bees are found wild in the forests, and the silk-worm succeeds in the south.

Ethnography.—The people of European Russia, though broken up into a great number of distinct nations, all belong to two great divisions of the human family—the Caucasian and Mongolian.

The first of these divisions is almost exclusively represented by the Sclavonians, who embrace nearly nine-tenths of the entire population. The principal subdivisions of the Sclavonic race, within the limits of Russia, are the Russians proper, the Poles, the Letts, and the Lithuanians, of which the first mentioned are by far the most numerous and widespread. These occupy the central and most fertile provinces; the Poles are for the most part confined to Poland and West Russia; and the Lithuanians and Letts to the Baltic provinces. The second grand division is represented by the Finns, Samoiedes, Tatars, and Calmucks. Of these the Finns are the most numerous, amounting to upwards of 2,000,000. The Samoiedes are few in number, and are confined to the government of Arkhangel. The Tatars inhabit the country north of the Black Sea and the river Kuban, and are nearly as numerous as the Finns; while the Calmucks are confined to the lower basins of the Don and Volga. In addition to these there are upwards of a million of Jews in European Russia, and about a third as many Germans.

Language.—The languages spoken in European Russia are even more numerous than the races that inhabit it; but, in common with the latter, they are nearly all reducible to two great families—the Indo-European and Finno-Tartarian. The nations of Sclavonic blood speak either the Russian, or one or other of its cognate tongues—the Polish, Lithuanian, and Lettish. The Finno-Tartarian family embraces the Finnish, Samoiede, and Georgian of Mount Caucasus; while the Wallachian, spoken in Bessarabia, is a Greco-Latin tongue.

Religion.—The Sclavonians, and more especially the Russians proper, belong to the Greek branch of the Eastern Church; but the great majority of the Poles are Roman Catholics. A considerable portion of the population of Finland and the Baltic provinces are Protestants of the Lutheran type; the Tatars and Circassians are for the most part Mohammedans: while the Calmucks are generally Buddhists. The emperor is the head of the Greek Church, which in doctrine and rites closely approximates to the Roman Catholic. Though other religions are allowed to be professed, the amount of toleration enjoyed is of the narrowest possible description. Any attempt at propagating opinions at variance with those of the national Church, or of proselytising any of its adherents, is punished with imprisonment, and for the third offence with exile to Siberia; or the convert is condemned to loss of property, and to detention for life in a convent.

Education.—Russia is the worst educated country in Europe, there being only 1 out of every 84 of the population at school, while in Germany the proportion is about 1 in 7. The schools are under the surveillance of the priests, and religious instruction constitutes the basis and sum of all school training. Public establishments for the pursuit of science are numerous, and are liberally endowed by the Government—the most celebrated of them being the "Academy of Sciences" at St Petersburg. There are now only six universities—viz., those of Dorpat, Moscow, Kharkov, Kasan, St Petersburg, Kiev—the universities of Wilna and Warsaw having been suppressed by the Government.

Literature.—The literature of Russia is extremely meagre, and confined within narrow limits. The only branches of science that have been cultivated with success are—their own national history, topographical descriptions of foreign countries (chiefly Asiatic), and philological investigations relative to the Sclavic languages, in which they have displayed great ingenuity and perseverance. Philosophy,

and the different branches of natural science, have, till recently, been much neglected. Astronomy, however, is prosecuted with the greatest success, especially at the great and splendidly equipped national observatory of Pulkova (founded in 1835), where W. and Otto Struve have highly distinguished themselves. The following are a few of the most distinguished names in Russian literature:—

HISTORY: The venerable Nestor, born 1056, laid, by his 'Annals,' the basis of all Sclavic history. Michael Lomonosof, born 1711, is regarded as the father of Russian literature. Nicholai Karamsin, author of the 'History of the Russian Empire,' extending to the reign of the House of Romanoff, died in 1826; and Ustrailov, author of a 'Life of Peter the Great.' POETRY: Gabriel Dershayin, born 1743, celebrated for his inimitable 'Ode to Deity,' which has been translated into many European and Asiatic tongues. The Chinese Emperor has it printed in letters of gold, on white satin, and hung up in his palace. Alexander Pushkin, usually considered the greatest poet Russia has produced (born 1799). PHILOLOGY: Alexander Vostakoff, the first Sclavic scholar in Europe; Kowalovski, distinguished for his knowledge of the Mongolian languages; Bichoorin, the best Chinese scholar in Russia; Senkowski, the celebrated Orientalist; Schaffarik, author of the famous 'History of the Sclavic Language and Literature;' Merslakoff, the first literary critic in Russia; Dobrovsky, a Hungarian, author of 'Grammar of the Sclavonic Languages;' and the celebrated Pallas, a German by birth, who was not only a distinguished naturalist, and historian of the Mongolian nations, but also a laborious and indefatigable philologist. By command of the Empress Catharine, he undertook a comparative vocabulary of all the languages of the world, two volumes of which were published at St Petersburg, in 1789. They contain 286 words, in 200 languages of Asia and Europe. A third volume, which never appeared, was intended to embrace the languages of Africa and America. THEOLOGICAL LITERATURE: Theophon Prokovitch, usually styled the Russian Chrysostom, died 1756; Platon Levshin, the most productive of the ecclesiastical writers; Anastasius Bratonofski who takes the first place among Russian pulpit orators. PROSE WRITERS AND NOVELISTS: Zagoskin, Gretsch, Bestucheff, Muranieff, Batuschkoff, Sagoschkin, Odojewsky, Bulgarin. POLITICS AND STATISTICS: M. L. de Tegoborski, author of 'Commentaries on the Productive Forces of Russia,' 1856. PHYSICAL SCIENCE: Tenner, Struve, Winnecke, and many others.

Government, Army and Navy, &c.—The government is an absolute hereditary monarchy; all power, both in Church and State, emanates from the emperor, and to his decision all matters of importance must be submitted. He cannot, however, safely disregard the laws, nor the opinions and wishes of the nobility, who have greater political influence in Russia than in any other European country. One half of all the land of the country is in their possession, but they have suffered a heavy loss by the recent emancipation of the serfs on their estates. The emperor is aided in all matters that come under his immediate cognisance by a Privy Council. Subordinate to this there are four great boards of administration—viz., the Imperial Council, the Directing Senate, the Holy Synod, and the Council of Ministers.

Army and Navy.—The military force is very great—probably the

greatest in the world. In 1868, the regular army amounted to 780,000 men and officers, besides an irregular force of 177,000 light cavalry, consisting for the most part of Calmucks and Cossacks. The regular army consists of eight grand divisions—viz., the Guards, the Army of the South, the Army of the West, the Army of Lithuania and Poland, the Corps of the Caucasus, the Finland Corps, the regiments of the military colonies, and the army of reserve. The Navy, in 1868, consisted of 267 steamers and 29 sailing vessels. These were manned by 60,230 men, and carried 3749 guns. This force was divided into two principal fleets—the Baltic Fleet and the Black Sea Fleet. Besides these there were 24 ironclads and a fleet of steam-rams, carrying 149 guns, building at St Petersburg and Nicolaiev. A great number of the ships composing the Black Sea fleet were sunk by the Russians in the harbour of Sebastopol, in 1854, to prevent the Anglo-French fleet from entering. The Baltic fleet, in like manner, protected itself behind the fortifications of Kronstadt. The army is maintained at a comparatively small expense, and both army and navy do not cost more than £24,000,000 annually. The *Public Debt*, which in 1853 amounted to £63,537,000, had in 1869 increased to £203,000,000. In the same year the *Revenue* of the empire amounted to £80,346,000, and the *Expenditure* to £72,606,000.

Commerce and Manufactures.—The commerce of Russia is chiefly internal. No country in the world can so well dispense with a foreign commerce. The empire is a world to itself, and wants almost nothing with which the wider world can supply it. It is the only country that produces train-oil in abundance on one of its coasts, and olive-oil, in scarce less abundance, on another,—that can exchange its native seal-skins and ermine furs for its native silk and cotton,—that makes gin from its barley and rye, brandy from its wine-lees, and rum from its sugar,—that barters its cranberries, gathered on the wastes of Siberia, for its pomegranates reared in the Transcaucasian provinces,—and that, while it mixes up its barley-bread, in one of its districts, with the inner bark of the fir, makes its cakes of unimported rice in another. Its commerce is greatly facilitated by its innumerable navigable rivers, and its vast and excellent system of canals, by means of which its four seas are connected together in many directions, and a complete system of inland navigation established, the centre of which is Moscow. A great portion of the internal trade is transacted at annual fairs, the most remarkable of which are those of Nijni-Novgorod, Berditchev, Kursk, and Lublin in Poland. The foreign trade is conducted by means of caravans, which periodically leave Orenburg for Asia, and Perm for Siberia. The chief seaports are—St Petersburg and Riga on the Baltic, Odessa on the Black Sea, Astrakhan on the Caspian, and Arkhangel on the White Sea.

Manufactures.—Owing to the sparseness of the population, the general deficiency of coal, and other causes, Russia can never become a great manufacturing country; but, since the time of Peter the Great, manufactures have made very considerable progress. Most of the articles used by the peasantry are made in the villages, each of which is usually devoted to a single branch of industry. The principal articles manufactured on a large scale are linen, sail-cloth, cordage (the chief factories for which are Moscow and its vicinity), cotton, woollen, and worsted stuffs in most of the large

towns, and silk-spinning at Moscow, which is renowned for its brocades, and gold and silver embroideries. Hardware, cutlery, and firearms, are extensively manufactured at Nijni-Novgorod, Tula, and other places. But Russia is particularly celebrated for its unrivalled russia and morocco leather, largely used in bookbinding, &c. Russia also holds a distinguished place in the manufacture of articles from malachite (green copper ore) and of ornamental glass; while Astrakhan is famous for its isinglass, shagreen, and caviare.

The *Exports*, in 1872, were valued at £50,000,000 sterling, and the *Imports* at £65,500,000. The chief exports are corn, tallow, hides, hemp, flax, linseed, timber, tar, pitch, potash, russia leather, furs, wool, oil, wax, honey, copper, iron, platina, cordage, and sail-cloth. Great Britain is Russia's best customer, taking three-fourths of her flax and hemp, three-fourths of her tallow, three-fifths of her oleaginous grains, two-fifths of her exported corn, &c. The total value of her exports to the United Kingdom, in 1873, amounted to £21,000,000 (or more than half of the entire amount); while she received from us, in return, goods to the value of £9,000,000, consisting chiefly of cotton stuffs and yarn, machinery and mill-work, hardware, iron, woollens, tea, lead, tin, together with large quantities of coal and salt. The mercantile marine is small, and the foreign trade is principally conducted by other nations. In 1865, there arrived in Russian ports 11,648 vessels; cleared, 11,839, carrying 2,390,000 tons. The principal imports are articles of colonial produce, together with raw silk and cotton, manufactured goods, wine, indigo, cochineal, and madder. Tea is imported by the overland caravan-route from China, and many other articles come in the same way.

Inland Communication.—The *Roads* are in general wretched, with the exception of that from the capital to Moscow, which is said to be the finest in the world. The condition of the roads, however, is of less importance, as they are covered with ice and snow for many months in the year, when sledge-travelling is universal.

The *Canals* are very numerous, and of the highest importance. Among the principal may be mentioned:—1. The *Canal of Vishnei Volotchok*, connecting the Twertza with the Msta, thus uniting the Baltic with the Caspian, which, by this route, is 3200 miles distant, and yet the canal is only 3 miles long. It is free from ice from the middle of April to the end of October, and is frequented by about 2000 vessels annually. Another canal, joining the Neva with the Volga, is the *Canal of Tikhvin*. 2. The *Canal of Kubinsk*, uniting the Caspian with the White Sea. 3. The *Maria Canal*, uniting a small river flowing into Lake Bielo with another flowing into Lake Onega—thus connecting (by the aid of No. 2) the Baltic, Caspian, and White Seas. 4. The *Ladoga Canal*, and the *Sias* and *Swir Canals*, form a navigable chain around the south and south-east sides of Lake Ladoga. This is the most frequented of all the Russian canals: it is said that 25,000 vessels pass through its principal sluice annually. *Railway* communication is very limited, considering the extent of the empire. In 1858, only 715 miles were completed; but in 1872 there were 10,500 miles open for traffic. The principal railways already executed are:—The great line from St Petersburg to Moscow, 400 miles, with branches to Nijni-Novgorod, Kozlov, and Orel; and the line from St Petersburg to Warsaw and Cracow, with branches to Riga, Vitebsk, Kovno, and Königsberg; and a line from Odessa to Balta, in Podolia. In 1868 there were 24,840 miles of telegraphic communication.

SWEDEN AND NORWAY (SCANDINAVIA).

Boundaries.—The kingdoms of Sweden and Norway, now united under one sovereign, embrace between them the entire north-western peninsula of Europe, usually called Scandinavia. N., the Arctic Ocean; W., the Atlantic, North Sea, and Kattegat; S., the Skager Rack and the Baltic; E., the Baltic and Finland. Lat. 55° 20′—71° 6′ N.; lon. 4° 50′—31° 5′ E.

Stockholm, the capital of Sweden, on the east coast of the peninsula (lat. 59° 17′, lon. 18° 3′), is nearly on the same parallel of latitude as Lerwick, Christiania, St Petersburg, Tobolsk, Mount St Elias (in N.-west America), and Cape Farewell (in Greenland); and nearly on the same meridian as Spitzbergen, Danzig, Buda, Mostar, Otranto, Gulf of Sidra, and Cape Town. Scandinavia is the largest peninsula in Europe, and, in common with nearly all the others, stretches out in a general southerly direction: extreme length, 1190 miles; greatest breadth, 490 miles. The peninsula is traversed, in the direction of its greatest length, by an immense mountain-range, which, being confined to the side next the ocean, gives Norway a highly Alpine character; while Sweden, or the eastern half, is in general low and level; but, towards the mountains, it rises in a succession of terraces, marked by cataracts in the numerous streams, which generally follow a straight course towards the Baltic, and frequently expand into long narrow lakes. Coasts low and sandy on the eastern side, but deeply indented on the western by rock-bound inlets, called *fiords*, and lined by an innumerable multitude of small islands. Coast-line, without including the inlets, about 3000 miles, or one mile of seaboard to every 98 square miles.

Area and Population.—The area of the entire peninsula is 293,918 sq. m., of which 123,297 belong to Norway, which is very little larger than the British Isles; and 170,621 to Sweden, which is nearly half as large again as Norway. In 1873 the united population amounted to 6,061,000; that of Norway being 1,763,000, or about half the population of Scotland; and that of Sweden 4,298,000, or one-fourth larger than the population of the latter country. Scandinavia is thus the most thinly peopled country in Europe, having only 20 persons to each sq. m.

Political Divisions.—Sweden is divided into three large *provinces*, or for administrative purposes, into twenty-four *läns*, and Norway into six *stifts* or counties.

Sweden, Three Provinces.

Gothland.*—Gothenburg 62 (Götha), Malmöe 28, Helsingborg 6,

* In Swedish, the vowels *a*, *e*, *i*, *ä*, and *ö* have the same sounds as in German; as in Karlstad, Wener, Indals, Mälar, Jönköping.

a = *o* in stone, as Abo, Lulea (*O'boo, Lu'le-o*).
o at the end of a syllable = *oo* in food, as Orebro (*Or'e-broo*); in other cases, like *o* in *not*.
u = *oo* in food, as Umea (*Oo'me-o*).
y = German *ü*, as Nyköping (*Nü'chö-ping*).
g and *j* before a vowel = *y* in you, as Gefle, Jönköping (*Yev'leh, Yön'chö-ping*).
ki or *kj* = *ch* in church, as Linköping, Linkjöping, or Linköping (*Lin'chö-ping*).
z = *ts*, as in German. All other consonants are sounded as in English.

Landskrona 7, Lund 11 n. (the Sound), Carlscrona 18, Kalmar 9 (the Baltic), Norrköping 22, Linköping 8 (Motala), Jönköping 11 (Lake Wetter), Christianstad 6 (Helge).

Svealand.—STOCKHOLM 147, Westerås 5 (L. Mælar), Orebro 9 (L. Hielmar), Upsala 11, Dannemora (Sala), Fahlun 5 n. (Dal), Nyköping 5 (E. co.)

Norrland.—Hernösand 2 (Angermann), Gefle 16 n. (Dal), Sundsvall 5 (Indals).

NORWAY, SIX STIFTS.

Agershuus.*—CHRISTIANIA 73, Fredericksháld 7 (G. of Christiania), Drammen 14 (Drammen), Frederickstadt 3 (Glommen).

Christiansand.—Christiansand 11 (Torrisdals), Stavanger 18 (Bukke Fiord), Mandal 3 (Skager Rack).

Bergen.—Bergen 30 (Kors Fiord).

Trondhjem.—(Trondhjem or Drontheim 21 (Trondhjem Fiord), Roraas 4 (Glommen).

Nordland.—Tromsöe 3 (W. coast), Alstahoug 1 (Wessen).

Finmarken.—Hammerfest 1 (Whale Island), Altengaard 2 (Alten).

Descriptive Notes.—There are only sixteen towns in the whole peninsula with more than 10,000 inhabitants, of which only seven exceed 20,000—viz., Stockholm, Christiania, Gothenburg, Bergen, Malmöe, Norrköping, Trondhjem; while Stockholm alone exceeds 100,000.

SWEDEN.—**Gothenburg**, the second city in Sweden both as regards population and commerce, has shipbuilding docks, numerous manufactures, and a large export trade in herrings, iron, steel, copper, and timber. **Malmöe**, a strongly-fortified manufacturing town on the Sound. **Lund**, a very ancient town, where the kings of Scania were elected in the middle ages, is the seat of a university. **Carlscrona**, by far the best naval station in Scandinavia, has a large export trade in metals, potash, and other Baltic produce. **Kalmar**, famous for the treaty of 1397, which united the kingdoms of Denmark, Norway, and Sweden. **Norrköping**, a thriving manufacturing town, noted for its broadcloth. **Linköping**, an ancient town, near which was fought, in 1596, the battle of Stangebro, in which Sigismund was defeated by his uncle Charles IX. **Stockholm**, the capital of Sweden since the seventeenth century, and the chief commercial emporium of Scandinavia, is built partly on the mainland, and partly on a number of islands on the strait connecting Lake Mælar with the Baltic: the houses are chiefly of brick or painted wood, the streets unpaved, narrow, crooked, and dirty, but the palace and some of the public buildings are very fine. It has numerous learned societies, the most celebrated of which is the Academy of Sciences. **Upsala**, the former capital of Sweden, with a far-famed university, in which Linnæus, Celsius, Bergmann, Scheele,

* The pronunciation of Norwegian names differs considerably from that of the Danish, though in all other respects the two languages are nearly identical. The following are the chief peculiarities of the Norwegian :—

e final has a distinct sound, as in Molde (*Mol'deh*).
o at the end of a syllable = *oo* in food, as Odense (*Oo'den-seh*).
aa = *o* in not, as Roraas (*Roo'ros*).
öe make two syllables, as in Tromsöe (*Trom'sö-e*).
uus = *oo* in food, as Agershuus (*Ag'ers-hoos*).
d = English *d*, and not like *th*, as in Danish.
g is always hard, as in Stavanger (*Sta-vang'ger*).

and Berzelius, were professors. **Dannemora**, the site of the largest and most valuable iron-mines in the world. **Fahlun**, with a great copper-mine, which has been wrought for upwards of 1000 years. **Gefle**, one of the principal towns in Sweden as regards shipping and commerce.

NORWAY.—**Christiania**, capital of the kingdom of Norway, finely situated at the head of a long narrow *fiord* on the south-east coast, is a small city possessed of no architectural beauty, but the streets are straight, broad, and well paved, and the environs are exceedingly picturesque. It contains a university, a royal palace, the national arsenal, and various educational and scientific establishments. **Frederickshald**, noted for its strong fortress, in besieging which, in 1718, Charles XII. of Sweden was killed. **Christiansand**, a trading seaport town, with shipbuilding docks. **Bergen**, the commercial capital of Norway, and its most important fishing-station, is well fortified, and is a station for a naval squadron: notwithstanding its high latitude, the harbour is seldom frozen. **Trondhjem**, the ancient capital of Norway, and the place where its sovereigns are still crowned, carries on an active trade in deals, dried fish, tar, and copper. **Roraas**, noted for its extensive copper-mines. **Hammerfest**, the most northern town in Europe (lat. 70° 38′), enjoys the light of the sun, in summer, for two months without interruption. **Altengaard**, noted for its raised beaches, which conclusively show that in the course of ages the surrounding country has attained a greatly higher elevation than formerly.

Capes and Islands.—Cape Nordkyn, the most northern point of the continent of Europe (lat. 71° 5′); North Cape, on the island Magerōe; Statland, S.W. of province Trondhjem; the Naze, the most southern point of Norway. ISLANDS: Magerōe and Soröe groups, N.W. of Finmarken; Tromsöe and Lofoden groups, N.W. of Nordland; Vigten, Fröyen, Hitteren, and Smölen, off the coast of Trondhjem; Œland and Gothland, S.E. of Sweden.

Gulfs and Straits.—Varanger Fiord and Porsanger Fiord, N. of Finmarken; West Fiord, bet. Nordland and the Lofoden Isles; Trondhjem Fiord and Romsdal Fiord, W. of Trondhjem; Sogne Fiord and Hardanger Fiord, W. of Bergen; Bukke Fiord, W. of Christiansand; Skager Rack, bet. Norway and Denmark; the Kattegat and Sound, bet. Sweden and Denmark; Kalmar Sound, bet. Sweden and Œland; Gulf of Bothnia, bet. Sweden and Finland.

Surface and Mountains.—An immense mountain-range, known as the Scandinavian or Norwegian Alps, traverses the western side of the peninsula, from the Naze to the North Cape, the southern half of it being confined to Norway, and the northern forming, for the most part, the boundary between Norway and Sweden. Its total length is about 1150 miles, with a breadth varying from 200 miles in the south to 60 in the north. The range consists of a series of plateaux or elevated table-lands, separated here and there by deep narrow valleys, and is very rich in minerals. It is usually divided into three sections—viz.:

Hardanger Field, in the south of Norway, separating the waters that enter the Skager Rack from those that flow westward to the Atlantic:

highest summit, Skageslöestinden, the culminating-point of Scandinavia, 8670 feet (lat. 61° 10′). Height of snow-line in this chain, 5000 feet.

Dovre Field, between Agershuus and Trondhjem, separating the basins of the Glommen and Gotha from the Atlantic: highest summit, Sneehätten, 7620 feet (lat. 62° 20′).

Kiolen Mountains, between Norway and Sweden, forming the water-parting between the Baltic and the Atlantic: highest summit, Sulitelma, 6200 feet (lat. 67° 3′). Height of snow-line on Sulitelma, 3500 feet. The total extent of country elevated above the snow-line is said to exceed 3500 sq. miles.

Glaciers, &c.—The glaciers of Scandinavia are numerous, though less known than those of Switzerland. They are found in three principal groups—viz., a southern, central, and northern group. The farthest south contains the Folgefond glacier, S.E. of Bergen (lat. 60°), which is the first glacier met with travelling northward; and the Nygaard and Lodal glaciers, near Skageslöestinden, which in summer discharge 5,000,000 cubic fathoms of snow per day into the river Justedal. The second group is in the Kiolen Mountains: it includes Sulitelma, and is usually called the Fondal group. The last group, called Jokulsfield, is in the neighbourhood of Altengaard, and is remarkable as descending to the level of the sea, into which it projects some of its members a considerable distance. The WATERFALLS of Scandinavia have long been celebrated. The most remarkable is the Trolhätta Fall, on the Gotha. The river descends 112 feet, in several successive leaps, presenting a spectacle extremely grand, the quantity of water being greater than in any other waterfall in Europe. The other principal waterfalls in Norway are the Sarpen, on the Glommen, near Frederickstadt, 60 feet high; the Riukan Fos, formed by the Maan, which issues from the mountain-lake of Miös-Wasser, in the Upper Tellemark, and descends perpendicularly 800 feet; and the Vöring-Fos, in Bergen, which descends from a height of 900 feet.

River-Basins.—These are all small, owing to the peculiar configuration of the country, and its being traversed by mountains and elevated table-lands through its entire length. There are no reliable data for estimating the area of any of them, except the Glommen (16,000 sq. m.) and the Gotha (17,000 sq. m.)

Lakes.—The lakes of Scandinavia are extremely numerous. In Norway alone there are said to be 30,000; but they are generally of very limited extent. Nearly one-eighth of the surface of Sweden is covered with lakes, some of them being of considerable magnitude, as Wener, 2020 sq. m.; Wetter, 710 sq. m.; and Mælar, 472 sq. m. The largest lake in Norway is Miösen, 63 m. long by 12 m. broad. Almost all the lakes of Scandinavia are on the eastern side of the great mountain-chain. In the basin of the *Glommen* is L. Miösen; *Gotha*, Wener, Foemund; *Matala*, Wetter; *Mælar*, Mælar, Hielmar; *Dal*, Siljan; *Umea*, Stor-Uman; *Skeleftea*, Stor-Avan; *Lulea*, Stor-Lulea; *Tornea*, Tornea.

Table of Rivers and Towns.—All the important rivers of the peninsula take their rise on the eastern slope of the mountains, and pursue a S.E. course to the Skager Rack and Kattegat (branches of the North Sea), or to the Baltic; while the W. slope is traversed by numerous mountain torrents and by deeply-penetrating fiords.

Basins inclined to the Atlantic and North Sea.

Rivers.	*Towns.*	*Rivers.*	*Towns.*
Alten,	HAMMERFEST, *Altengard.*	G. of Christiania	Frederickshald, *Fredericksstadt*, CHRISTIANIA.
Wessen	ALSTAHOUG.	Drammen,	Drammen.
Trondhjem Fiord,	TRONDHJEM or DRONTHEIM.	Glommen, *l*	*Fredericksstadt*, *Roraas.*
Sundal,	*Christiansund.*	W. co. Gothland,	*Uddevalla*, *Halmstad.*
Kors Fiord,	BERGEN.	Gotha,	GOTHENBURG, Wenersborg, Mariestad, Carlstad.
Bukke Fiord,	Stavanger.	Clara,	Carlstad.
Mandals,	*Mandal.*	The Sound,	*Helsingborg*, Landskrona, Lund, Malmöe.
Torrisdals,	CHRISTIANSAND.		
Nid,	Arendal.		
Skeens Elf,	*Skeen.*		
Lauven,	*Laurvig*, *Kongsberg.*		

Basins inclined to the Baltic.

S. co. Gothland,	Ystad, *Carlshamn*, Carlscrona.	Sala, *l*	Upsala, *Dannemora.*
Helge,	*Christianstad.*	Hielmar,	OREBRO.
Kalmar Sound,	*Christianopel*, Kalmar, *Westervik.*	Dal,	GEFLE, n.
Motala,	Linköping, Norrköping, Jönköping.	Fahlun, *l*	Fahlun.
L. Mælar and R. Arboga,	STOCKHOLM, *Westerås.*	Indals,	*Sundsvall*, *Ostersund*
		Angermann,	HERNÖSAND.
		Umea,	*Umea.*
		Pitea,	*Pitea.*
		Lulea,	*Lulea.*

Climate.—Owing to its being nearly surrounded by the sea, Scandinavia enjoys comparatively a very mild climate. On the western side of the great mountain-chain it is milder than on the eastern side, and greatly more humid. The snow-line is much higher than in corresponding latitudes of other countries, and the cereals extend much farther N. In Siberia the cultivation of grain ceases at lat. 60°, while in Norway it extends to lat. 70°. Even at the North Cape the sea never freezes; but the shallow and comparatively fresh water of the Baltic and Skager Rack are generally covered with ice, in winter, near the coasts. In the interior of Sweden the summers are very hot, and the winters extremely cold. Here mercury often freezes north of lat. 61°, and snow covers the ground for nearly six months in the year. Spring is almost unknown, and from eight to twelve weeks usually suffice for sowing, ripening, and reaping the crops. Owing to the length of the day and the great heat, barley may be sown and reaped at Hammerfest within the space of six weeks. The fall of rain on the west coast, where the mountains intercept the westerly winds, usually amounts to from 70 to 80 inches, but on the eastern side it is much less (see p. 32).

Geology.—The most remarkable circumstance in the geology of Scandinavia is the fact that the whole peninsula, N. of lat. 56° 3′, is ascertained to be gradually rising at the rate of four feet in a century; while in a small district south of this there is a corresponding subsidence. Crystalline schists occupy five-sixths of the entire surface, and constitute the great mountain-chain. Granite is of comparatively rare occurrence, except on both sides of the West Fiord, the western side of Christiania Fiord, the district lying bet. Lake Wetter and the Baltic, and a tract in the basin of the river Dal. Silurian strata cover two

extensive areas—one in the N. of Finmarken, and the other in the centre of the peninsula, extending from the parallel of Bergen to near the arctic circle. Upper palæozoic and trap rocks occur in the upper basin of the Dal.

Minerals.—The iron-mines of Sweden are the most famous in the world, and yield on an average 70,000 tons annually. The Swedish iron imported into Great Britain is mainly used for the manufacture of steel. In 1867, we received 60,056 tons of bar-iron and 4656 tons of unwrought-steel from Sweden. The best iron is found in the Län Upsala. Copper is also abundant, the mines of Fahlun alone formerly yielding 500 tons annually, but the supply is rapidly declining. Silver is found to a small extent, and cobalt is worked in several places. Other products are—coal, of an inferior quality, lime, granite, and porphyry. The mountains of Norway are rich in minerals, but from the difficulty of transport and the scarcity of fuel, mining industry is but little developed. There are 23 mining establishments, but they are confined to iron, copper, silver, cobalt, and chrome. Gold, lead, alum, and graphite also occur, but in small quantities, as also magnetic iron and garnets of a beautiful green colour. The silver-mine of Kongsberg, worked since 1624, was formerly regarded as the richest in Europe.

Botany and Agriculture.—The flora of Scandinavia is wholly embraced in Schouw's *first* and *second* phyto-geographic regions, or the "region of saxifrages and mosses," and the "region of the umbelliferæ and cruciferæ." The former, also called the *Alpine Arctic flora*, includes Finmarken and the higher elevations of the mountain-range; and the latter, the entire remainder of the peninsula. According to Fries, the flowering-plants of Scandinavia are distributed as follows.: total number of species in Lapland, 697; in Norway, 1200; Sweden, south of the lakes, 1416; Sweden, north of the lakes, 1256. Among trees, the pine tribe is the most important, forming, in the south, extensive forests. Spruce and Scotch pines are largely exported to England, where, owing to their resinous qualities, they are highly prized. The fir extends to the Polar Circle, the pine beyond it, while the birch is found as far north as lat. 70°, and at an elevation of 1580 feet. A fourth part of the entire surface of Sweden is covered with forests; yet the yield of timber is small, a great part of it being required for fuel, and for charcoal required in working the mines. The principal forest-trees are pine, fir, birch, oak, ash, beech, lime, elm, alder, and willow. Fruit-trees, except the cherry, are limited to the south of lat. 60°.

Among cereals, barley is the principal crop in all parts of the peninsula. In Norway it extends to lat. 70°, and in Sweden to 69°. Other kinds of grain do not thrive in Norway, except in favoured spots; but oats, rye, and even wheat are cultivated in Sweden. The soil is not generally very fertile, and not more than one-fifth of the surface of the entire peninsula is under cultivation. In Norway, only a hundredth part of the surface is under culture, and the quantity of corn raised is insufficient for home consumption, but potatoes are extensively cultivated. Owing to recent improvements in husbandry, the quantity of corn raised in Sweden fully

meets the wants of the population. The horses and cattle are small, and the sheep yield an inferior kind of wool. The reindeer is the only domestic animal north of lat. 64°, where Iceland moss, which is its customary food, is very abundant. The dog is also employed in this region as a beast of draught.

Zoology.—The principal *Mammals* are the brown bear, wolf, lynx, fox, glutton, lemming, deer, elk, marten, hare, sable, beaver, and squirrel. *Birds*, including the eagle and falcon, are numerous, especially on the western coasts, were sea-fowl abound. The wild-goose, and eider-duck are numerous, as also the grouse and capercailzie. Wild-ducks abound in the lakes and rivers, and the swan appears in the S. in winter. The seas, lakes, and rivers, swarm with the greatest abundance of *Fish*, and fishing forms in Norway the most important branch of industry, especially the cod, herring, salmon, whale, lobster, and oyster fisheries. The rich abundance of trout and salmon renders Norway the best angling country in the world. The herring has wellnigh forsaken the eastern coast; but another species of fish resembling it (the ströming) is caught in great numbers. The waters of Scandinavia embrace three of Forbes's *Regions of Marine Life*—viz., the Arctic region on the N., the Boreal on the W., and the Celtic on the S. and S.E., including the Skager Rack, Kattegat, and Baltic.

Ethnography.—The people are all of the Scandinavian branch of the Teutonic stock, with the exception of the Finns and Lapps, who belong to the Mongolian race.

Language.—The Swedes, Norwegians, and Danes originally spoke the same language—viz., the Icelandic, old Danish, or Norse; and though the Swedish and Norwegian are now dialectically different, they are still very closely allied, both in their roots and inflections; while the Norwegian is almost identical with modern Danish. The latter is the vernacular language of the peasantry in Norway, and the Danish Bible is the only one used in the churches.

Religion.—Scandinavia is the most Protestant country in Europe. A few Finns and Lapps still remain heathens, but almost the whole Teutonic population are Protestants. Lutheranism is the State religion, both in Norway and Sweden, and the Established Church is almost universally adhered to; but other sects are tolerated by law, except Jews, Jesuits, and Mormons, in Norway. Recently, however, much intolerance has been manifested in Sweden towards native Protestants who refuse to attend the Established Church.

Education.—In both countries nearly all the young are in regular attendance at school, and scarcely a peasant can be found in the peninsula who cannot read and write. This is mainly owing to a law which prohibits marriage to all who have not been admitted to the communion, and which admits to the communion only those who can read. There are three universities—viz., those of Christiania, Upsala, and Lund, besides colleges and high schools in all the principal towns.

National Character.—The Norwegians are generally tall and vigorous, and distinguished by the lightness of their hair. They evince a strong predilection for a seafaring life, and make excellent sailors. They are extremely tenacious of old customs, and are peculiarly jealous of all encroachments on the part of Sweden. In both countries, intemperance is the prevailing vice. The Swedes are characterised by a tall, robust

stature, light hair, blue eyes, and fair complexion; they are intelligent, active, and enterprising, and extremely fond of scientific pursuits.

Literature.—The literature of Scandinavia is adorned by many names of more than European reputation, especially in the department of physical science.

POETRY: Sternhjelm, Dalin, Creutz, Gyllenborg, Runeberg, Bishop Tegnor, Böttiger, Atterbom, Franzen, Nicander, Kellgren. HISTORY: Geijer, Fryxell, Dalin, Lagerbring, Strinnholm, Ekelund, Ahlquist. PHYSICAL SCIENCE: In botany, Linnæus, Fries, Wahlenberg, Hasselquist; in chemistry, Scheele, Bergmann, Berzelius; in mineralogy, Rinmann; in medicine, Rosenstein; in mechanics, Polhem, Alströmer; in mathematics, Celsius, Klingenstierna; in architecture, Tessin; in geography, Forsell; and in ethnography, Professor Nilsen. MORAL SCIENCE: Grubbe, Biberg. THEOLOGY: Wingard, Wallin, Emanuel Swedenborg. FINE ARTS; In sculpture, Bystrom, Göthe; in painting, Fahlcrantz, Hörberg. MISCELLANEOUS: Cederborg, Livijn, Frederica Bremer, Baroness Knorring, Engström, Hopken, Hermanson, and Almquist.

Government, &c.—Norway is a limited hereditary monarchy, united with Sweden since 1814, each country retaining its own laws and legislative assemblies. The reigning sovereign, Charles XV., resides in Sweden the greater part of the year, but is bound to visit Norway annually. In the absence of the king, Norway is governed by a viceroy, who resides at Christiania. The Legislative Assembly of Norway is called the Storthing, a body which possesses greater powers than even the British Parliament,—a bill after being passed in three successive assemblies becoming law, even without the royal assent. The Swedish National Assembly is called the Diet, which consists of four Chambers, and shares the legislative power with the sovereign.

Army and Navy.—The armies of the two countries are separate, but in time of war both are commanded by the king. In 1873, the Swedish army numbered 133,000 soldiers, and the Norwegian, 13,000. In 1867, the Swedish navy comprised 48 war-vessels, carrying 462 guns, besides 125 gunboats; while the navy of Norway amounted to 156 vessels, carrying 5000 guns and 4000 men. The united *Revenue*, in 1868, amounted to £3,098,000; the *Expenditure* to £3,378,000; and the *Public Debt* to £6,500,000.

Commerce and Manufactures.—At the end of 1868, the mercantile marine of both kingdoms comprised 8562 ships, carrying 998,232 tons. The foreign trade is principally with Great Britain, Russia, Denmark, Portugal, and Germany. The commerce of Sweden with Great Britain is twice as great as with any other country. The principal articles exported from the peninsula are deals and timber, bar-iron and steel, oats, fish, ice, tar, pitch, turpentine, and some copper; while the chief articles imported are woollen manufactures, averaging £120,000 per annum, wrought and unwrought iron, salt, grain, and articles of colonial produce. Next in importance to the timber trade are the fisheries, which consist mainly of cod and herring.

The *Manufactures* of Sweden consist chiefly of articles of home consumption, as woollen, cotton, and linen cloth, sugar, tobacco, and paper. Tanning is an important branch of industry: distilling and brewing are

extensively prosecuted, and shipbuilding is carried on to some extent. There are few manufactures in Norway: brandy distilleries and saw-mills are numerous; next to these are forges and metal-foundries, the produce of which is generally exported in a raw state. Iron-wire and nails are important items of industry, as also coarse woollen, linen, and cotton cloth for domestic use, glass, paper, oil, gunpowder, soap, tobacco, sugar-refining, and shipbuilding.

Internal Communication.—This is very deficient, especially in Norway, where few of the rivers are navigable for any considerable distance. The Glommen, the largest river in the kingdom, is navigable for only 14 miles; but regular steam communication has been established between the towns along the coast. The principal canals are the Gotha Canal, which connects the Kattegat with the Baltic, by the Gotha river and Lakes Wener and Wetter, avoiding the celebrated Trolhätta Fall; the Hielmar or Arboga Canal, uniting Lakes Mælar and Hielmar; and the Södertelge Canal, joining the southern extremity of Lake Mælar with the Baltic. In 1874, there were 2227 miles of railway open in the peninsula, of which 1913 miles belonged to Sweden. Railways connect Stockholm with Gothenburg, Jönköping, and Fahlun; while others are in progress in Gothland, which will connect it with Copenhagen and Stralsund, by Malmöe and Ystad. In Norway, a short line has been constructed between the capital and Lake Miösen, and another uniting the valleys of the Glommen and Logen.

Foreign Possessions.—The only foreign possession belonging to Sweden is the small island of St Bartholomew in the West Indies. It was ceded by France to Sweden in 1784, has an area of 16 sq. m., and a population of 2898.

Historical Sketch.—Sweden, Norway, and the greater part of Denmark were anciently known as Scandinavia, from which proceeded the Normans or Northmen, who conquered Normandy in the beginning of the 9th century, and England in 1066. Until the 7th century, Norway was governed by petty rulers. About 630, Olaf, of the race of Odin, was expelled from Sweden, and established a colony in Vermeland, which became the nucleus of a monarchy founded by his descendant, Halfdan III., in 824. The ancient inhabitants of Sweden were the Fins, a diminutive race, who retired to Finland, their present territory, on the appearance of the Goths, who have ever since been masters of Sweden. The Christian faith was established in Norway about A.D. 998, and in Sweden in the beginning of the eleventh century. Stockholm was founded in 1260, and Christiania in 1624. By the Union of Kalmar (1397), Norway, Sweden, and Denmark were united under Margaret. Denmark and Norway separated from Sweden in 1523, when Gustavus Vasa ascended the throne of Sweden. His illustrious descendant, Gustavus Adolphus, fell at the battle of Lutzen, in 1632. In 1524 Sweden embraced the Reformed religion. Finland, formerly part of Sweden, was ceded to Russia by the treaty of Fredericksham, 1809; and Norway was united to Sweden by the treaty of Kiel, 1814.

ASIA.

1. **Position and Boundaries.**—N., the Arctic Ocean; W., the Ural Mountains and River, the Caspian, Black Sea, Mediterranean, and Red Sea; S., the Indian Ocean; E., the North Pacific Ocean.

Europe and Asia form in reality but one continent, which extends halfway round the globe. Of this gigantic continent Europe forms only a great peninsula. Asia alone is by far the largest and most populous of the six great divisions of the globe. Its form approximates to that of a scalene triangle, the longest side of which extends from East Cape in Behring Strait to Suez in Arabia, and the shortest from Suez to Cambodia. The only parts of Asia projecting beyond this triangle are, on the S., the three peninsulas of Malaya, Hindustan, and Arabia; on the N.W., the peninsulas of Anatolia and the two smaller ones on either side of the G. of Obi; and on the E., the projections of Kamtchatka, Corea, and Eastern China. Continental Asia extends from lat. 1° 10′ (C. Romania) to 78° 12′ N. (C. Severo), and from lon. 26° 3′ E. (C. Baba) to 169° W. (E. Cape). Hence it lies wholly in the northern hemisphere, and embraces 77 degs. of lat. and 165 of lon. The exact centre of the continent is Karamangnai, a small lake in Southern Mongolia, about 8° W. of Pekin.

2. **Coast-Line and Extreme Points.**—The coast-line is variously estimated from 30,000 to 35,000 m. The former gives 1 m. of coast to every 550 m. of surface, while Europe has 1 m. to every 225 m. (p. 64). The extreme length from Behring Str. to Str. of Bab-el-Mandeb is 6700 m., and the extreme breadth from C. Severo to C. Romania 5400 m.

3. **Area and Population.**—The area of Asia is but very imperfectly ascertained; but, according to the most recent estimates, it amounts to 16,838,191 sq. m., or nearly a third part of the land surface of the globe. It is more than the area of Europe and Africa together, or even than North and South America. The population is also variously estimated, there being no accurate census of most Asiatic countries; but the sum of the populations of the different states, as given in the following table, is 769,705,466, or about four-sevenths of the population of the globe. Vast as this population is, Asia is far less densely peopled than Europe, having only 42 persons to each sq. m., while Europe has 75. The most densely peopled regions are China and the valley of the Ganges, while the least populous are the marshy flats of Siberia, and the deserts of Arabia, Syria, Persia, and Central Asia.

4. **Political Divisions.**—The actual number of independent states is uncertain and ever fluctuating, and several of the countries enumerated in the following table contain individually a number of small states not acknowledging allegiance to any other power.

TABLE OF ASIATIC STATES.

NAME AND POSITION.	Area in Eng. Square Miles.	Population according to latest Census.	Capital.	River, &c., on which the Capital stands.
Asiatic Turkey, in the extreme W.,	671,997	18,186,000	Smyrna	Ægean Sea
Arabia, S. of Asiatic Turkey,	1,219,748	5,000,000	Muscat', &c.	G. of Oman
Persia, S.E. of Asiatic Turkey,	648,000	5,000,000	Teheran'	Kehveh
Afghanistan, E. of Persia,	258,500	4,000,000	Kabul', &c.	Kabul
Biluchistan, S. of Afghanistan,	110,000	1,000,000	Kelat'	Gundava
Hindustan, E. of Biluchistan,	1,475,198	241,236,235	Calcutta, &c.	Hûghli
Further India, E. of Hindustan,	(915,000)	(25,935,700)		
British Possessions,	93,664	2,562,000	Arakhan'	Koludain
Birma,	190,510	4,000,000	Mandelay	Irawâdi
Siam,	309,000	5,000,000	Bangkok	Meinam
Malaya,	45,586	1,148,000	Perak, &c.	N. Str. of Malacca
Anam or Cochin China,	220,000	12,000,000	Huè	China Sea
Lower Cochin China,	56,250	1,225,700	Saigon'	Me-Kong'
Chinese Empire, N.E. of Hindustan,	(4,117,000)	(425,000,000)	Peking'	Pei-ho'
China Proper,	1,609,500	405,000,000	Peking'	Pei-ho'
Mongolia,	1,831,800	14,000,000	Kurin'	Tula
Tibet,	675,700	6,000,000	Lhasa	Muran'
Kashgaria, N. of Tibet,	270,000	3,000,000	Kashgar'	Kashgar'
Western Turkestan, W. of Kashgaria,	880,000	3,000,000	Bokhâra, &c.	Kohik
Siberia and Central Asia,	6,444,940	6,841,000	Tobolsk'	Irtish
Transcaucasia, W. of the Caspian,	170,798	4,006,531	Tiflis	Kûr
Japan, E. of Mongolia,	157,000	33,000,000	Yeddo	Is. Niphon
Total,	16,838,191	769,705,466		

5. **Surface, Plains, and Table-Lands.**—Nearly the whole of Siberia and Western Turkestan consists of one vast continuous lowland plain, of nearly the size of Europe, and only partially separated from the great European plain by the Ural Mountains. Only its southern portion is capable of cultivation. In the vicinity of the Arctic Ocean it forms a succession of desert tracts called *Tundras*, which in summer are covered with moss, and interspersed with lakes and marshes, and in winter are buried under a solid covering of ice—the subsoil being constantly frozen. The eastern half is less uniformly level than the western, and is more generally covered with forests. Indeed, one unbroken forest region, immediately south of the *tundras*, extends from Arkhangel, in European Russia, to Kamtchatka and Behring Strait. This forest, chiefly of pines, is about 4000 m. in lineal extent, and is the largest on the surface of the globe. South-west of the wooded region is that of the *Steppes*, which consist of immense barren plains, abounding in salt lakes, into which many of the rivers of Europe and Asia discharge their contents. This forms one of the most depressed portions of the earth's surface, and includes the Caspian, the surface of which is 83 ft. below that of the Black Sea, and having a depth in the south of nearly 3000 ft. Other plains are *Mesopotamia*, or the lower basin of the Euphrates and Tigris; the *Thur*, or valley of the Indus; *Plain of Hindustan*, or valley of the Ganges; *Indo-Chinese Plain*, in Further India; and the *Chinese Plain*, or the lower basin of the Yang-tse-Kiang and Hoang-ho. More than a half of the surface of Asia is occupied with an immense elevated plateau or table-land, extending without interruption for about 5500 m., from the Mediterranean and Red Seas in the W. to the coast of Corea in the E., with a breadth varying from 2000 to 700 m. It is divided into the following distinct portions: Plateau of Asia Minor, 3280 ft. high, and plateau of Armenia, 7000 ft., bounded by Mount Taurus and the Caucasus; plateau of Arabia from 5000 to 8000 ft. high, occupying the whole interior of that peninsula; plateau of Iran, 3500 ft., between the Persian Gulf and the plain of Turkestan; plateau of Pamir, 15,600 ft., N. of the Hindu Kush Mountains, and containing the Sir-i-Kol, the most elevated lake in the world; plateau of Tibet, from 10,000 to 14,000 ft., N. of the Himalaya, and originating all the great rivers of Southern Asia; plateau of Gobi or Shamo, 3000 ft. high, 1200 m. long, and from 500 to 700 m. broad, in Eastern Turkestan and Mongolia—it consists of an immense rainless desert of shifting sand containing little vegetation; plateaux of Malwa, Dakhan, and Maisûr, in Hindustan, from 2000 to 3000 ft. high, and separated from the table-lands of High Asia by the valleys of the Indus and Ganges.

6. **Peninsulas and Isthmuses.**—The principal peninsulas are the following: Anatolia or Asia Minor, bet. the Black Sea and the Mediterranean; Arabia, bet. the Red Sea and the Persian Gulf; Hindustan, bet. the Arabian Sea and the Bay of Bengal; Further India, or the Eastern Peninsula, bet. the Bay of Bengal and the China Sea; Malay Peninsula, a southern prolongation of Further

India; Corea, bet. the Yellow Sea and the Sea of Japan; Kamtchatka, bet. the Seas of Okhotsk and Kamtchatka. Nearly all the Asiatic peninsulas stretch southward—the chief exception being Asia Minor. The Isthmus of Suez connects Asia with Africa; and the Isthmus of Kraw, Siam with Malaya: the other isthmuses of Asia have no distinctive names.

7. **Capes and Islands.**—Baba, W. of Asia Minor; Ras-al-Had, S. E. of Arabia; Comorin, S. of Hindustan; Dundra Head, S. of Ceylon; Negrais, S.W. of Pegu; Romania, S. of Malaya; Cambodia, S. of Anam; King, E. of Japan; Patience, E. of Island Saghalien; Lopatka, S. of Kamtchatka; East Cape, the most eastern point of Siberia; Severo, or North-East Cape, N. of Siberia. ISLANDS.—Rhodes, Samos, Scio, Mitylene or Lesbos, in the Ægean Sea; Cyprus, in the Levant; Socotra, S. of Arabia; Ceylon, S. of Hindustan; Hainan, S. of China; Formosa, E. of China; Japan Isles, E. of Mantchooria; Saghalien, a semi-peninsula, E. of Siberia; Kurile Islands, bet. Japan and Kamtchatka; Aleutian Isles, bet. Kamtchatka and Alaska; New Siberia, in the Arctic Ocean. For the islands of Malaysia (Sumatra, Java, Borneo, Philippine Isles, &c.), see under "Oceania."

8. **Seas, Gulfs, and Straits.**—Black Sea, N. of Asia Minor; Sea of Marmora, bet. Asiatic and European Russia; Ægean Sea, or Archipelago, W. of Asia Minor; Levant, W. of Syria; Red Sea, Str. of Bab-el-Mandeb, and G. of Aden, bet. Arabia and Africa; Arabian Sea, bet. Arabia and Hindustan; Persian Gulf, Str. of Ormuz, and G. of Oman, bet. Arabia and Persia; Gulfs of Kachh and Cambay, N.W. of Hindustan; G. of Manaar and Palk Strait, bet. Hindustan and Ceylon; Bay of Bengal, bet. Hindustan and Further India; G. of Martaban, bet. Pegu and Tenasserim; Str. of Malacca, bet. Malaya and Sumatra; G. of Siam, S. of Siam; China Sea, bet. China and the Philippine Isles; G. of Tonquin, bet. Tonquin and the island Hainan; Formosa Strait, bet. China and Formosa; Yellow Sea, bet. China and Corea; Str. of Corea, bet. Corea and Japan; Sea of Japan, bet. Japan and Mantchooria; G. of Tartary, bet. the mainland and Saghalien; Sea of Okhotsk, bet. Okhotsk and Kamtchatka; Sea of Kamtchatka, G. of Anadir, and Behring Str., bet. Siberia and Alaska; Gulfs of Obi and Kara, N.W. of Siberia.

9. **Mountain-Systems.**—The Bolor Tagh Mountains, in the centre of Turkestan, midway between Spain and Kamtchatka, and between Novaia Zemlia and Ceylon, is the grand centre from which all the great mountain-ranges of Asia and Europe diverge. This great primary chain stands on the lofty plateau of Pamir (15,600 ft.), between the sources of the Amoo and the Yarkand, and attains an elevation of 19,000 ft. The following are the principal chains that radiate from it in all directions:—

The Western System.—This great range forms the northern boundary of the table-lands of Western Asia, and is then prolonged through European Turkey, till it reaches the Alps, Cevennes, and Pyrenees, terminating at the shores of the Atlantic. The Asiatic portion separates the

waters flowing into the Indian Ocean from those that discharge themselves into the Black Sea, Caspian, and Sea of Aral. Its principal members are the following: 1. The *Hindu Kush*, separating the Panjab and Afghanistan from Turkestan, and the basin of the Indus from that of the Amoo; maximum elevation about 20,000 ft. 2. The *Paropamisan Range*, in the N.E. of Persia, separating Turkestan from the plateau of Iran; highest summit, Koh-i-Baba, 16,000 ft. 3. The *Elburz Range*, S. of the Caspian, Mt. Demavend, 18,464 ft., and *Zagros*, or Mountains of Kurdistan, 12,000 ft., separate the basins of the Euphrates and Caspian: height of snow-line on the Elburz, 11,000 ft. 4. *Mountains of Armenia*, between the basins of the Caspian and Black Sea: highest summit Mt. Ararat, 17,112 ft. 5. *Taurus* and *Anti-Taurus*, enclosing the table-land of Asia Minor, separate the basins of the Euphrates from that of the Black Sea; highest summit Mt. Argish, 13,000 ft. 6. The *Lebanon Range* (10,061 ft.), proceeding from Mt. Taurus southward along the Syrian coast to Mt. Hermon in the north of Palestine. 9053 ft. high, and thence continued through Palestine into the peninsula of Sinai—Mt. St Katharine, 8526 ft., Mt. Sinai, 7359 ft. 7. *Mt. Caucasus*, proceeding in a north-eastern direction from the centre of the Western System, and separated from the Mountains of Armenia by the valley of the Kur (p. 326, under "Russia").

The South-Eastern System.—This system extends from the southern extremity of the Bolor Tagh to the China Sea, and forms the southern wall of the lofty plateau of High Asia. It contains the loftiest elevations on the earth's surface, and consists mainly of the following chains: 1. The *Himalaya* ("abode of snow") between Hindustan and Tibet, and separating the basin of the Ganges from the upper basin of the Brahmaputra. The three loftiest peaks are Mt. Everest or Gaurisankar, 29,002 ft. above the level of the sea (the culminating point of Asia, and probably the highest summit on the earth's surface), bet. Nepal and Tibet, lon. 86° 30′ E.; Kunchinjunga, in Sikhim, 28,150 ft.; and Dhawalagiri, in Nepal, 28,080 ft. Several other peaks in this range rise to an elevation of 25,000 ft., and not fewer than a hundred attain a height of 20,000 ft. The chain is 1500 m. long, and from 100 to 350 m. broad: height of snow-line on the south side, 16,200 ft.—on the north side, 17,400 ft.; highest elevation at which wheat grows, 13,000 ft. 2. The *Karakorum Mts.*, in Tibet, midway bet. the Himalaya and Kuen-Lun, and nearly as lofty as the former: highest summit, Dapsang peak, 28,278 ft. 3. The *Mts. of Arakhan*, bet. the Irawadi and Bay of Bengal, 5600 ft. 4. Mts. of Siam, Cambodia, and Anam, in Further India: highest summit, Tidibang-sa, in Malaya, 6561 ft.

The Eastern System, extending from the Bolor Tagh due east to the Pacific Ocean, and consisting of two main sections: 1. The *Kuen-lun* Mountains, separating the upper basins of the Indus and Brahmaputra from that of the Yarkand, about 22,000 ft. high. 2. The *Pe-ling*, between the Yang-tse and Hoang-Ho. Several counterforts set out from the Pe-ling—viz., the Yun-ling, 12,000 ft., between China and Tibet; the Nan-ling, 8000 ft., between the basins of the Yang-tse-Kiang and Canton river; the Kihan-Shan, In-Shan, and Khin-gan Mountains, forming the S.E. wall of the desert of Shamo.

The North-Eastern System, extending E.N.E. from the Bolor Tagh to Behring Strait, separates the river-basins that incline to the Arctic Ocean from those inclining to the Pacific. It embraces—1. *Thian-Shan*, or Celestial Mountains, in Kashgaria, separating the basins of the Obi and the Yarkand; Tengri Tagh, 21,000 ft., being far above the limit of per-

ennial snow. 2. The *Altaian, Sayansk,* and *Yablonoi Mountains,* in the S. of Siberia, separating the basin of the Amoor from those of the Yenisei and Lena; Mount Katunsk, in the Altai, 12,790 ft. 3. *Stanovoi* and *Aldan Mountains,* in Eastern Siberia, between the Arctic Ocean and Sea of Okhotsk—Schiwelutch, in Kamtchatka, 10,548 ft.; Kliutschew, 15,825 ft.; these and many other summits are active volcanoes. The limit of perennial snow in Kamtchatka is at an elevation of 4475 ft.

10. **Volcanoes.**—These are not numerous, except in Kamtchatka and the islands which line the eastern coast, especially the Japan, Aleutian, and Kurile Isles; Pecha and Ho-Chan, in the Thian-Shan range, are the most remarkable exceptions to the general rule of the proximity of volcanoes to the sea. Earthquakes are numerous in S. and E. Asia, as also in Asiatic Turkey. (See under "Oceania.")

11. **Mountain-Passes.**—These are very numerous, and many of them highly celebrated. Those across the Himalaya sometimes exceed by half a mile of elevation the loftiest summit of the Alps: thus the Ibi-Gamin Pass, between Gurwhal and Tibet, has an elevation of 20,459 ft., and is the highest known pass; Mustakh Pass, crossing the Karakorum Mountains, 18,435 ft.; Parang Pass, 18,500 ft.; Kiobrang Pass, 18,313 ft.; Niti Pass, from Kumaon to Tibet (lon. 80°), is 16,814 ft. high. The Khyber Pass, leading from Peshawur to Jelalabad (3373 ft.), though narrow and dangerous, is the only route from Northern India to Afghanistan. The Bolan Pass, from Dadur to Quettah, 5793 ft. high and 59 m. long, is the only practicable carriage route from the lower Indus to the table-land of Biluchistan. Bamian Pass, between the Hindu Kush and the Paropamisan Mountains (8496 ft.), is the only pass practicable for artillery from Afghanistan into Western Turkestan. Pass of Keli-Shin, in the Zagros Mountains (9600 ft.), leads from Persia to Baghdad. The Pass of Golek Boghaz (*Cilician Gates*), across the Taurus range, connects Cilicia with Cappadocia, and was the route by which Alexander the Great entered Cilicia. Pass of Beilan (*Syriæ Portæ*), between Mt. Amanus and the Mediterranean, connects Asia Minor with Syria: this was the pass through which Darius fled, after his defeat by Alexander on the adjoining plain of Issus, B.C. 333.

12. **River-Basins and Capitals.**—The river-systems of Asia surpass in number those of any other continent, though none of them attains the dimensions of the Amazon or Missouri. This is owing to the different disposition of the mountain-chains, which in America are placed on one side of the continent, whereas the principal chains and table-lands of Asia traverse its central regions, and send the rivers in five different directions, corresponding to the five great basins to which they respectively belong—viz., the Black Sea and Mediterranean, the Indian Ocean, the Pacific Ocean, the Arctic Ocean, and the basin of continental streams. The following Table shows the direct lengths and areas of the various river-basins, together with the capitals of the different states and principal divisions of states contained in them. When the name of the state is different from that of its capital, the former is added within parentheses:—

River-Basins.	Direct Length.	Area in Geographical Square Miles.	Capitals of States and Provinces
1. Basins inclined to the Black Sea and Mediterranean.			
Kizil Irmak,	400	28,160	Sivas (Room).
Sihoon,	100	..	Adana (Itahil).
Jyhoon,	100	..	Marash.
Orontes,	200	..	(*Antaki*, anc. Antioch.)
2. Basins inclined to the Indian Ocean.			
Euphrates,	850	195,680	Erzroum, Aleppo, Shuster (Khuzistan), Khorumabad (Luristan), Baghdad, Mosul (Turkish Kurdistan), Diyarbekr, Van.
Indus,	950	312,000	Haidarabad (Sindh), Iskardo (Bultistan), Leh (Ladakh), Bhawalpur, Lahur (Panjab), Kashmir, Kabul (Afghanistan),
Luni,	300	..	Jodhpur, Ajmir.
Mahi,	200	..	Baroda (Gujarat).
Nerbudda and Tapti,	560	78,000	Baroch, Surat.
Kaveri,	320	..	Maisur'.
Krishna,	500	81,600	Kolapur, Haidarabad.
Godaveri,	550	92,800	Nagpur.
Mahanadi,	380	..	Katak, Sambalpur.
Ganges,	1000	432,000	Calcutta (Bengal), Patna (Behar), Benares, Allahabad, Sikhhim, Khatmandu (Nepal), Lukhnow (Oudh), Rewah, Agra (N.W. Provinces), Bhurtpur, Delhi, Sagar, Jhansi, Bhopal, Gwalior, Dholpur, Bandi, Kotah, Dhar, Jaypur, Udipur, (Mewar), Dewas, Ujjain, Indur, Mirat, Bareilly (Rohilkhand), Almora (Kumaon).
Brahmaputra,	700	330,000	Lhasa (Tibet), Kush-Behar, Tasisudon (Bhotan).
Irawadi and Saluen,	800	331,000	Mandelay (Birma), Pegu, Munipur; Mulmein (Tenasserim Province).
3. Basins inclined to the Pacific Ocean.			
Meinam and Mekong,	1250	216,000	Bangkok (Siam); Saigon (Lower Cochin China).
Choo-kiang,	580	90,200	Canton, Kwei-lin (Kwang-se).
Yang-tse,	1800	547,800	Nankin (Kiang-su), Ngan-king (Gan-hway), Woo-chang (Hoo-pih), Nan-chang (Kiang-si), Chang-sha (Hoo-nan), Kwei-yang (Kwei-chow), Ching-too (Se-chuen), Yun-nan.
Hoang-Ho,	1150	537,400	Tsi-nan (Shan-tong). Lan-chow (Kan-su), Se-gan (Shen-se), Tae-yuen (Shan-se).
Amoor,	1250	582,880	Nikolaievsk (Primorsk), Blagoveschansk (Amoorskaya), Kirin-Ula (Mantchooria), Chita (Trans-Baikal).

River-Basins.	Direct Length.	Area in Geographical Square Miles.	Capitals of States and Provinces.
4. Basins inclined to the Arctic Ocean.			
Kolyma,	500	107,200	(*Nijni Kolimsk*, in Yakutsk.
Indigirka	600	86,400	(*Zachiversk*, in Yakutsk.
Lena,	1300	594,400	Yakutsk.
Yenisei,	1950	784,580	Krasnoiarsk (Yeniseisk), Irkutsk, Urga (Mongolia).
Obi,	1800	924,800	Tobolsk, Tomsk, Semipolatinsk.
5. Basin of Continental Streams.			
Kur,	520	64,640	Tiflis, Erivan, Shemakha.
Volga,	900	397,460	(See p. 96.)
Ural,	550	83,200	Orenburg.
Amoo Dasia,	860	193,600	Khiva, Kundus.
Syr Daria,	720	227,920	Turkestan, Khokand.
Yarkand or Tarim,	880	177,120	Kashgar (Eastern Turkestan).
Helmund,	420	76,380	Kandahar.
Heri Rood,	430	..	Meshed (Khorassan), Herat.

13. **Lakes.**—The lakes of Asia are very numerous, especially in Asia Minor, Western Turkestan, and the great Central Basin. To Asia belongs the greatest lake in the world (the Caspian), and the largest fresh-water lake in the Old World (Lake Baikal). Beginning at the N.E. of Asiatic Turkey, and following the order of the river-basins in which they occur, the following are the principal lakes:—

Kizil Irmak Basin.—Tuz-Gul, in the centre of Asia Minor, 45 m. long, 16 m. broad, 3000 ft. above the level of the sea, is the saltest lake known, and has no outlet. *Jordan.*—Sea of Galilee; Dead Sea, intensely salt, 1312 ft. below the level of the Mediterranean, the lowest lake known. *Euphrates.*—Lake Van, in Turkish Armenia, salt; no visible outlet. *Indus.*—Munchur, in Sindh; Wallur, in Kashmir; Rhawan and Mansarowar, at the source of the Satlej. *Brahmaputra.*—Tengri-nor and Paltee, in Tibet. *Yang-tse.*—Poyang and Tong-Ting, in China Proper. *Hoang-Ho.*—Ko-ko-Nor, N.W. of China Proper. *Yenisei.*—Baikal, in South Siberia, the largest fresh-water lake in the Old World; area 14,000 sq. m., drained by the Angara. *Obi.*—Zaisan, in Dzungaria, drained by the Irtish. *Basin of Continental Streams.*—The Caspian, area 178,866 sq. m., being the largest lake in the world, 83 ft. below the level of the sea; Lake Urumiah, W. of the Caspian, very salt; Sea of Aral, E. of the Caspian, area 27,000 sq. m., and 117 ft. above the Caspian, receives the Amoo from Lake Sir-i-Kol, height 15,600 ft. above the sea, the highest lake known; Lake Balkash, far E. of the Sea of Aral, area 11,500 sq. m.; Lake Issyk-Kul, 200 m. S. of Lake Balkash; Lob Nor, in the basin of the Yarkand, and Tengri Nor, in Tibet; Zurrah or Hamun, in Afghanistan.

14. **Climate.**—Extending from the immediate vicinity of the equator to far within the Arctic circle, Asia exhibits every variety of

climate, from the intense heat of the torrid zone to the extreme and long-continued cold of the circumpolar regions. Three climatic zones, however, are easily distinguishable. The most northern of these, which includes the great Siberian plain, is characterised by extreme cold for nine months in the year, then giving place to a brief period of excessive heat. The mean temperature of this zone extends from the freezing-point of water to below zero. The coldest portion of this dreary region, and, so far as yet known, of the whole globe, is in the lower basin of the Lena, where Yakutsk, for example, has a mean annual temperature of 13°.9; summer 58°.7, and winter —36°.7, or 36½° below zero; being a difference of 95° between mean summer and mean winter. For the month of January, the mean temperature is —45°.5, while that of July is 68°.8 Fah. In Northern Siberia the ground is perpetually frozen to a great depth, the superficial stratum alone thawing in summer. The rivers are not clear of ice till June; but as the ice melts in their upper courses earlier than in the lower, extensive areas are for a season under water. (See under "Siberia.") The Middle Zone, which embraces the high table-lands of the interior, is cold and dry, and subject to the influence of piercing winds from the north: here large tracts are seldom visited by rain, especially the great desert of Gobi or Shamo, a large portion of Biluchistan, Persia, Northern Arabia, and Southern Syria, in some of which a drop of rain is never known to fall, and in others only at long intervals, and in very small quantities. The Southern Zone, comprising all the countries south of the table-lands, is characterised by intense summer heat, extreme moisture, and no real winter: here the rain falls with extreme violence at particular seasons of the year; at Calcutta no less than 64 inches fall annually; and at Bombay, 16 inches of rain have been known to fall in a single day.

15. **Geology.**—The geology of Asia has hitherto been very imperfectly explored, but the facts already ascertained warrant the following generalisations: TERTIARY AND ALLUVIAL DEPOSITS cover the plains of Siberia and Western Turkestan, of Hindustan, Further India, and China, the Arabian and Syrian deserts, and the table-land of Persia. SECONDARY STRATA embrace numerous tracts in Asia Minor, Palestine, and Western Syria, the north-western half of Persia, parts of Arabia and Biluchistan, Tibet, Central China, the eastern part of Mantchooria, and several tracts in the basins of the Lena and Obi. PALÆOZOIC AND TRANSITION ROCKS occupy extensive tracts lying to the N. of lakes Balkash and Baikal respectively, the Stanovoi and Aldan Mountains, portions of the middle basin of the Yenisei, and a long belt lying S. of Cape Severo. Numerous large tracts of upper palæozoic also occur in Asia Minor. CRYSTALLINE STRATA prevail in the mountain regions of Central Asia, from Mount Elburz in the W. to the eastern extremity of the Yablonoi Mountains in the E., and from the Altai to the Chinese Sea; Siberia, E. of lon. 165°; many tracts in Asia Minor; together with the southern portions of the three principal peninsulas—Arabia, India, and Further India. IGNEOUS ROCKS prevail extensively in Asiatic Turkey, Central Hindustan, the mountain-chains of Altai, Stanovoi,

and Kamtchatka, and the Aleutian, Kurile, Japan, and Formosa Isles.

16. **Minerals.**—Asia has in all ages been celebrated for the number and variety of its mineral productions. *Diamonds* and other precious stones abound in India, Birma, the Ural and Altai Mountains; *Coal*, in Syria, Birma, Hindustan, China, and Japan; *Salt*, in Asia Minor, Arabia, Hindustan, China, Siberia, and Central Asia; *Petroleum*, on the shores of the Caspian; *Bitumen*, in the Dead Sea; *Nitre*, in India; *Sulphur*, in Ladakh; *Gold*, *Iron*, *Copper*, and *Platinum*, in the Urals; *Gold*, *Silver*, *Iron*, *Lead*, in the Altai; *Mercury*, in China, Tibet, and Japan; *Tin*, in the Eastern Peninsula and Japan; *Volcanic products*, in the Taurus range and in Japan.

17. **Botany.**—The vegetable products vary exceedingly in the different countries, according to latitude, elevation, and other climatic influences. The entire continent embraces no fewer than eight of the twenty-five *botanic regions* into which Prof. Schouw divides the vegetation of the globe—viz., the 1st, 2d, 3d, 6th, 7th, 8th, 12th, and 13th of his system. (See p. 54.) The characteristic vegetation of the first three regions is given at length under "Europe," p. 81. The sixth, or Japanese region, embraces Japan, Northern China, and the eastern part of Eastern Turkestan. Its vegetation occupies a middle position between the floras of Europe and North America, with a considerable affinity to that of India, as shown by its palms and bananas. The seventh, or Indian region, which embraces Hindustan, Ceylon, Further India, and the S. of China, and which is unrivalled for the richness of its vegetation, will be described under "Hindustan;" as also the eighth, or Emodic region, which comprises the mountains of Northern India, between the elevations of 5000 and 12,000 ft. The twelfth region, or Region of Balsam Trees, comprising the S.W. of Arabia, Persia, Biluchistan, and Sindh, will be noticed under the first of those countries; as will also the thirteenth region, usually known as the Desert Region, which comprises the remainder of Arabia and the great African desert.

18. **Zoology.**—The Asiatic continent constitutes the second of the six zoological kingdoms into which naturalists have divided the globe. (See p. 57.) It is divided into four zoological provinces—the Northern, Central, Southern, and Transition. The Northern province, or Arctic Asia, extends from the Arctic Ocean to the Altai Mountains, and from the Urals to the Pacific Ocean; being bounded on the south by the isothermal curve of 32° Fah., which marks the limit of the permanent frost of the soil. The Central province extends from the Altai to the Himalaya and Hindu Kush Mountains, and from the Caspian Sea to Japan. The Southern province, or Tropical Asia, comprises all the remaining countries of Asia lying east of the table-land of Iran; while the Transition province embraces Western Asia south of the Caucasus, the Caspian Sea, and the Paropamisan Mountains. The fauna of the last-named region

is peculiar, and forms a connecting link between the three zoological kingdoms of Europe, Asia, and Africa. The fauna of the Northern province resembles that of Northern Europe; while in the Central and Southern provinces are found the elephant, rhinoceros, Bengal tiger, and many other formidable animals, together with the camel, auroch, yak, musk-deer, argal, and Tibet goat. It is probable that all the domestic animals of Europe, with the exception, perhaps, of the sheep, have been originally derived from these two provinces. Asia has comparatively a less variety of birds and reptiles than of quadrupeds; but the cassowary, bustard, pheasant, domestic fowl, and a number of other gallinaceous birds, are abundant; while, among reptiles, the Indian python, the cobra de capella, and the crocodile, or gavial of the Ganges, are formidable in the extreme.

The following tables—the materials of which have been derived, for the most part, from Johnston's 'Physical Atlas'—present an accurate synopsis of the fauna of Asia, so far as presently known. The first column gives the name of the order; the second, the total number of species presently known; the third, the total number found in this continent; while the remaining three columns show the number of species found in Northern, Central, and Southern Asia, respectively.

Orders.	Total Number of Species.	No. of Spec. in Asia.	Asia.		
			N.	C.	S.
Asiatic Mammals.					
Quadrumana (Four-handed),	202	49	...	6	9
Carnivora (Flesh-eating),	328	276	36	55	166
Marsupialia (Pouched Animals),	123	4	...	...	...
Rodentia (Gnawing Animals),	604	185	42	20	32
Edentata (Toothless Animals),	28	5	...	...	2
Pachydermata (Thick-skinned),	39	17	..	6	4
Ruminantia (Ruminating),	180	67	11	17	25
Cetacea (Ocean-living),	75	29	24	...	...
Total number of Species,	1579	632	113	104	238
Asiatic Birds.					
Rapaces (Birds of Prey),	...	59	4	14	41
Scansores (Climbers),	...	95	2	7	86
Oscines (Songsters),	...	221	9	20	192
Gallinaceæ (Gallinaceous Birds),	...	85	5	8	72
Grallatores (Waders),	...	100	24	26	50
Natatores (Swimmers),	...	86	39	28	19
Total,	6226	646	83	103	460

Orders.	Total Number of Species.	No. of Spec. in Asia.	Asia.		
			M.	C.	S.
Asiatic Reptiles.					
Testudines (Tortoises), ...	69	27	...	4	23
Sauria (Lizards), ...	203	67	5	17	45
Ophidia (Serpents), ...	265	126	6	15	105
Batrachia (Frogs), ...	120	17	3	8	6
Total, ...	657	237	14	44	179

19. **Ethnography.**—Leaving out of view the Malay peninsula, which more properly belongs to Oceania, the entire Asiatic continent is peopled by two great races of the human family—the Mongolian and the Caucasian.

Mongolian Race.—Asia is peculiarly the home of the Mongol race, and Mongol nations occupy by far the greater portion of its surface. The river Brahmaputra, the Himalayan, Hindu Kush, and Paropamisan ranges of mountains, together with the Caspian Sea, form the great natural barriers that separate this race from the Caucasian. Mongol nations thus occupy the whole of Northern, Central, and Eastern Asia, together with a part of Asia Minor, the inhabitants of which form a connecting link between the Mongolian and Caucasian races. For their physiological, intellectual, and moral characteristics, see above, at page 61. The languages spoken by the Mongol nations all belong to two great classes—the Monosyllabic and the Finno-Tartarian. The former is confined to the south-eastern angle of the Continent, and is spoken in China, Further India, Bhotan, and Tibet. The languages comprised under it, besides being monosyllabic, are wholly destitute of inflection; their alphabets are generally symbolic or ideographic (not phonetic); they are inartificial in their structure, and very limited in the range of their literature. The *Finno-Tartarian* family of tongues, though not altogether peculiar to Mongol nations, occupies the entire remainder of the Mongolian area—viz., Northern and Central Asia—and extends westward into Northern and even Central Europe. Its principal branches are the Turkish, Mongolian, and Tangusian, of Central Asia; the Japanese, Lu-Chuan, and Corean, of Eastern Asia; the Georgian and other languages of the region of the Caucasus; the Samoiede and Finnish, of the north part of both continents; and the Magyar or Hungarian, of Central Europe. All these languages are more or less inflectional and polysyllabic, possess phonetic alphabets, are more refined than the monosyllabic group, while one of them—the Turkish—contains a highly respectable literature. Modern research has established an undoubted affinity between the monosyllabic and Finno-Tartarian families. The religious aspirations of the entire Mongol family have always been obtuse and of a very low order. Shamanism, or demon-worship, and polytheism, at one time widely prevailed; but the nations speaking monosyllabic tongues have now for the most part adopted Buddhism, while the Turanian nations have become Mohammedans.

Caucasians occupy the remainder of Asia — their territory being

bounded by the Black Sea, Caspian, the Hindu Kush, and Himalaya on the N.; by the Red Sea and Indian Ocean on the W. and S.; and by the Bay of Bengal and Brahmaputra on the E. The Hindus, Medo-Persians, and Syro-Arabians, form the three primary divisions of this race in Asia.

The *Hindus and Medo-Persians* appear to have been originally one people, to have spoken the same language, and to have occupied, in common, the plateau of Iran; but at a time anterior to the dawn of history, the Hindus migrated eastward and settled in the plains of Hindustan, from which they expelled the aboriginal inhabitants, who were probably of Mongolian origin. Their language was the Sanscrit—a tongue of unparalleled copiousness and refinement; and though it is now a dead language, all the tongues presently spoken in Northern India are immediately derived from it. Brahminism and Buddhism—those two master forms of false religion—originated with this people, and continue to be professed by nearly a half of the human race.

The *Medo-Persian* group of nations occupies about a tenth part of the surface of Asia, embracing Persia, Biluchistan, Afghanistan, and the greater part of Turkestan and Armenia. The origin of these nations has never been accurately ascertained. Their very existence had been scarcely known beyond the elevated plateau which, from time immemorial, they appear to have occupied, when all at once they advanced from obscurity to empire. Emerging from their mountainous abodes, they captured Babylon the Great, and founded an empire which, in point of extent, exceeded even that of Rome. Their physical conformation, which is decidedly of the European type, corroborates the testimony afforded by their languages, as to their affinity with the principal nations of Europe. Their languages form an important branch of the great Indo-European family, and embrace the Persian, Pushtu, Biluchee, Kurdish, Ossitinian, and Armenian. A Semitic language—the Pehlvi—is supposed to have been predominant at a very remote period in Persia, though it originated in the provinces bordering on Assyria; but under what circumstances it became the general language of Media is still matter of conjecture. (See under "Persia.") A yet more ancient language is the Persepolitan, a true Medo-Persian idiom, vestiges of which are preserved in arrow-headed or cuneiform characters (like those of Assyria) on the monumental inscriptions recently discovered among the ruins of ancient Persian cities. The Zend language, now extinct, was another Medo-Persian tongue, and a sister dialect of the Sanscrit. It seems to have been the language of Zoroaster, and is still partially preserved in the sacerdotal books of the Guebres or Parsees. The earliest religion of the Medo-Persian nations was fire-worship, but they are now, with few exceptions, followers of Mohammed—the Nestorians and wandering Armenians being the only nation of this stock by whom Christianity has been received.

The *Syro-Arabian or Semitic* nations are chiefly confined to this continent, and especially to its south-western angle—viz., Arabia, Syria, and the basin of the Euphrates and Tigris. In perfection of physical conformation, the Syro-Arabians are regarded by eminent physiologists as equalling, if they do not indeed surpass, all the other branches of the human family. Yet their characteristics are by no means uniform. The Syrians, who still preserve their lineage pure and unmingled among the mountains of Kurdistan, have a fair complexion, with grey eyes, red beard, and a robust frame. The wandering Arab of the Desert is thin and muscular in form, with deep-brown skin and large black eyes; in the valley of the Jordan he has a dark skin, coarse hair, and flattened features, somewhat resembling the Negro type. The Jew is easily distin-

guished, in whatever country he takes up his abode, by his long oval face, and the peculiar cast of his physiognomy, though his hair is found of all shades, from jet-black to red. The Semitic languages are remarkably few in number, but, as a compensation for this, they can claim the highest antiquity, and are spread over an immense portion of the surface of the earth. They extend, without interruption, from the Persian Gulf and Lake Urumiah to the Atlantic, and from the Mediterranean and Mount Taurus to an undefined distance into the interior of Africa, where they come in contact with the Hamitic or African family. They are bounded on the east and north by the Indo-European or Japhetic family, and at one point (Asia Minor) come in contact with the Turkish—a Finno-Tartarian tongue. From the earliest times they were native in Palestine, Phœnicia, Syria, Mesopotamia, Babylonia, and Arabia—thus extending from the Tigris to the Mediterranean, and from the Armenian Mountains to the south coast of Arabia. The Phœnicians sent colonies at a very remote age to numerous islands and shores of the Mediterranean, and thus carried their language from Tyre and Sidon to the Pillars of Hercules; while the Arabians, on the other hand, carried their language across the Red Sea into Ethiopia.

TABLE OF SEMITIC LANGUAGES.

The Hebrew or Phœnician Branch, including—
- Canaanitish or pure Hebrew, in Canaan.
- Phœnician and Punic, in Phœnicia and Carthage.
- Samaritan, in the Kingdom of Samaria, forming a connecting link between the Hebrew and Aramean branches.

The Aramean or Syrian Branch, viz.—
- Chaldee or East Aramean, in Mesopotamia.
- Syriac or West Aramean, in Syria.
- Modern Syriac, a corrupt dialect of the Syriac, is still preserved among the mountains of Armenia, Persia, and Mesopotamia.

The Arabian Branch—
- Koraish, orginally spoken in North Arabia, the parent of Modern Arabic.
- Hamyaritic, the parent of the Ekhkili, the ancient dialect of South Arabia.
- Modern Arabic, in Arabia, Syria, and Northern Africa.
- Ekhkili, spoken by a mountain tribe in Hadramaut.
- Gheez or Ethiopic, derived from the Hamyaritic, was anciently spoken in Ethiopia (Abyssinia), but is now superseded by its two dialects, the Tigré and Amharic.
- The ancient Egyptian, with its descendant, the Coptic, were also allied grammatically to the Semitic group.

ASIATIC TURKEY.

Boundaries.—N., Transcaucasia, the Black Sea, and Sea of Marmora; W., the Ægean Sea, Levant, Isthmus of Suez, and the Red Sea; S., the Mediterranean, Arabia, and the Persian

Gulf; and E., Persia and Transcaucasia. Lat. 12° 40′—42° N., lon. 26°—48° E.

Aleppo, one of the principal commercial emporiums of the Ottoman Empire, is situated almost exactly in the centre of this wide area, if we omit Hedjaz and Yemen. It is in the same latitude as San Francisco, North Carolina, Gibraltar, Algiers, Malta, Rhodes, Mosul, Teheran, and King-ki-tao in Corea; and in the same longitude as Moscow, Kertch, Sinope, Gondar, and the mouth of the river Zambesé. Its extreme length, from the coast of the Black Sea to the Gulf of Aden, is about 2000 m.; while its breadth, from Cape Baba, in the Ægean Sea, to Mt. Ararat, is 970 m.

Area and Population.—The area is estimated at 671,997 sq. m., and the population at 13,186,000. Hence Ottoman Asia, though five and a half times larger than the British Isles, is greatly exceeded in population by England without Wales.

Surface.—That of Asia Minor is almost wholly mountainous, having a high table-land in the interior, and narrow plains along the sea-coast. In Armenia the surface is a succession of high mountain-chains and elevated valleys. In Syria the western part is traversed by a great chain of mountains, while the eastern is an immense desert plain. Mesopotamia consists partly of a continuation of the great Syrian Desert, and partly of rich alluvial soil once profusely watered by canals, but now unproductive through inactivity and misgovernment.

Political and Natural Divisions.—The Ottoman Empire in Asia comprises five great natural divisions—viz., 1. Turkish Armenia, in the N.E., now separated from Transcaucasia by the Aras or Araxes, and extending westward to a line drawn from the city of Trebizond to the Bay of Iskenderun. 2. Asia Minor, in the N.W., between the line above mentioned and the Archipelago, and between the Black Sea and the Mediterranean. 3. Syria, including Palestine, in the S.W., skirting the whole eastern shore of the Mediterranean from Mount Amanus to Arabia Petræa, and extending eastward to the Euphrates and the Syrian Desert. 4. Mesopotamia (including Irak Arabi and Al Jezira), and Turkish Kurdistan, in the S.E., between Persia and the Syrian Desert, and comprising almost the entire basin of the Euphrates and Tigris. 5. Arabistan (including Arabia Petræa, the Hedjaz, and Yemen), skirting the E. coast of the Red Sea from Syria to the Gulf of Aden. The Political Divisions, which are named *pashalics*, vary greatly in number and magnitude, according to the varying power of their respective governors.

Turkish Armenia.

Trebizond.—Trebizond 45, Rizah 30 (N. co.), Gunieh 5, Artvin 7 (Joruk).

Erzroum.—Erzroum 60 n., Erzingan 15 (W. Euphrates), Mush 7 (E. Euphrates), Kars 12 n. (Aras).

Van.—Van 15, Betlis 15, Ardish 6 (L. Van), Julamerk (Gt. Zab).

Asia Minor.

Sivas or Room.—Sivas 25, Kaisarieh 10 (Kizil Irmak), Amasia 20, Tokat 35 n., Marsivan 30 n. (Yeshil Irmak), Arab Gir 30 (Euphrates).

Anatolia.—Smyrna 150 (G. of Smyrna), Sinope 10 (north coast), Kutaya 50 n. (Sakaria), Angora 15 (Murtadabad), Kankari 18 n. (Kizil Irmak), Kastamuni 12 (Kara Su), Tosia 15 (Devrek), Scutari 60 (Bosporus), Brusa 60, Muhalitch 11 n. (Sea of Marmora), Scala Nova 20 (west coast), Manissa 60 (Kodus), Ak Hissar 6 (Phrygius), Alla Shehr 15 (Coganus), Aidin 30, Kara Hissar 60 n. (Mendereh).

Adana.—Adana 20 (Sihoon), Tarsus 7 (Cydnus).

Karamania.—Konieh 50 n. (Lake Beg-Shehr), Karaman 7 (west of Lake Ak Gol).

Marash.—Marash 18 (Jyhoon).

Cyprus.—Lefkosia 12 (Pediæus).

Syria, including Palestine.

Aleppo.—Aleppo 70 (Koik), Iskenderun or Scanderoon (G. of Scanderoon), Antioch or Antaki 18 (Orontes), Aintab 20 (60 miles N. Aleppo).

Tripoli.—Tripoli 18, Latakia 7 (coast).

Acre.—Acre or Akka 10, Beirout 100, Saida or Sidon 6, Sur or Tyre 5, Kisarieh (coast), Baalbec 2 (Leontes), En-Nasirah or Nazareth 3 n. (Kishon), Sebustieh or Samaria, Nablous or Shechem 8 (Arsuf).

Gaza.—Gaza or Guzzeh 15, Jaffa or Joppa 25 (coast).

Damascus.—Damascus or Esh Sham 120 (Burada), Hamah 30, Hems 30 n. (Orontes), Palmyra or Tadmor (in an oasis in the Syrian Desert), Jerusalem 25 (Kedron), Hebron or El-Khalil 10 (Kahcol), Beit Lahm 4 (Sorek), Jericho or Eriha n. (Jordan).

Mesopotamia and Turkish Kurdistan.

Baghdad.—Baghdad 100 (Tigris), Bassorah 60, (Shat-el-Arab), Shuk-el-Shuyuk 10, Hillah or Babylon 10, Hit 7, Anah 9 (Euphrates).

Diyarbekr.—Diyarbekr 14, (Tigris), Kerkisiyah, Rakkah 8 (Euphrates), Harran or Haran, Orfah 30 (Belikh).

Turkish Kurdistan.—Mosul 30 (Tigris), Arbel 6 n. (Great Zab).

Arabistan.

Arabia Petræa.—Tor (G. of Suez), Akaba (G. of Akaba), *Ruins of Petra* (Wady Mousa).

Hedjaz.—Mecca 45 n., Yembo 7, Jiddah 22 (Red Sea), Medina 15 (interior).

Yemen.—Sana 40, Damar 25, Taas 10 (interior), Mocha 7 (Red Sea).

Descriptive Notes.—Asiatic Turkey contains four towns (Smyrna, Damascus, Beirout, Baghdad) above 100,000 inhabitants; ten between 100,000 and 50,000 (Trebizond, Manissa, Erzroum, Kutaya, Brusa, Scutari, Kara Hissar, Konieh, Aleppo, Bassorah); and twenty between 50,000 and 20,000.

ARMENIA.—**Trebizond** is an important fortified sea-port, and the natural entrepôt of the European trade with Armenia, North Persia, and Transcaucasia: it was here that Xenophon, with his ten thousand Greeks, reached the coast, on their memorable retreat after the battle of Cunaxa. **Erzroum**, the principal city of Turkish Armenia, has extensive trade with all the adjacent countries, and is a chief halting-station of caravans travelling from Teheran to Mecca. **Kars**, near the Russian frontier, taken by the Russians in 1855, after a gallant defence by the Turks. **Van** is a fortified city with a flourishing trade, and possesses some remarkable antiquities, which have been attributed to Semiramis. **Betlis**, with manufactures of cotton cloths celebrated for their bright red colour: near it the army of Solyman the Magnificent was defeated by the Persians in 1554.

ASIA MINOR.—**Sivas** has manufactures of coarse woollen and other fabrics, with a considerable transit trade. **Kaisarieh**, near Mt. Arjish, has iron mines, and is the commercial entrepôt for a large extent of country. **Tokat**, a considerable depôt for agricultural produce, has manufactures of silk and calico, and a copper refinery. **Arab Gir**, a thriving town on the route between Trebizond and Aleppo. **Smyrna**, the capital of Asiatic Turkey, and one of the largest and richest cities in the empire: its foreign trade is very extensive, especially with great Britain, Austria, France, and the United States: it is the rendezvous of merchants from all parts of the world, and the residence of consuls from most of the European States: its imports alone are valued at £4,000,000 annually: it claims to be the birthplace of Homer, occupies a distinguished place in the early history of Christianity, was the scene of the labours and martyrdom of Polycarp, and is the only one of the great ancient cities on the western coast of the peninsula which has survived to this day.* **Sinope**, long famous for its commerce, continues to be the best port on the north coast of Asiatic Turkey: here, in November 1853, the Russian fleet, emerging from Sevastopol, attacked and destroyed a Turkish squadron, consisting of thirteen ships, lying at anchor in the roadstead, when four thousand Turks were cruelly butchered. **Kutaya**, a populous city, sometimes regarded as the capital of Anatolia, has numerous mosques, public baths, and khans, and a large trade in goats' hair, wool, and agricultural produce. **Angora**, long famous for the fine silken hair obtained from a species of goat, and used in the manufacture of shawls. **Scutari**, a large and populous town on the Bosporus, opposite Constantinople, of which it is usually considered a suburb: it will be remembered as the seat of the British military hospital during the Crimean war. **Brusa**, once the capital of Bithynia, is one of the most flourishing emporiums of commerce in Asiatic Turkey. **Manissa**, famous for its loadstones (hence called *magnets*), and for the victory gained by the two Scipios over Antiochus the Great, which secured to the Romans the empire of the East. **Aidin**

* The other six cities to which St John addressed epistles were—*Pergamos*, now Bergamo, 48 m. N. of Smyrna; *Thyatira*, now Ak-Hissar, 60 m. N.E.; *Philadelphia*, now Allah-Shehr, 85 m. E.; *Sardis*, now the miserable village Sart, 50 m. E.; *Laodicea*, now the poor village Eski-hissar, 120 m. S.E.; and *Ephesus*, now represented by heaps of ruins near Ayasaluk, 40 m. S. of Smyrna.

is an important commercial city, and next in rank to Smyrna, with which it is now connected by a railway. **Adana** has a trade in wool, cotton, corn, wine, and fruit. **Tarsus**, a celebrated city, and the ancient capital of Cilicia, was the birthplace of St Paul, and many other illustrious men. **Konieh** (Iconium) was visited by St Paul in his missionary travels: in the middle ages it was one of the greatest cities in Asia Minor, and is yet a place of considerable trade.

SYRIA AND PALESTINE.—**Aleppo**, the principal city in North Syria, rose to importance on the destruction of Palmyra, and became the great emporium of trade between Europe and the East. It has long been celebrated for its silk and cotton manufactures, and for its productive gardens. **Iskenderun** or Scanderoon has the best harbour on the Syrian coast. **Antioch** (Turk. Antaki), once the proud capital of Syria, and second to no city in Asia, was one of the earliest strongholds of the Christian faith: here the disciples of our Lord were first called Christians, though now it does not contain a single Christian church. **Tripoli** (anc. Tripolis), at the foot of a spur of Mount Lebanon, is surrounded by luxuriant gardens and remains of the architecture of the middle ages: the principal exports are soap and sponges. **Acre, Akka**, or St Jean d'Acre, the ancient Ptolemais, near the foot of Mount Carmel, is a place of great natural strength, and has always been regarded as the key of Palestine: it is celebrated for the memorable sieges it has sustained, but was reduced to a heap of ruins by the British fleet in 1840. **Beirout** is the port of Damascus and the Lebanon, and has more commercial activity than any other Syrian port: valuable mines of coal and iron have been found in the vicinity. **Saida** (anc. Sidon), probably the most ancient, and for a long time the most powerful, city of Phœnicia, till eclipsed by its colony Tyre: it was long famous for its manufactures of glass, a substance which it is said was first invented here. **Sur**, or Tyre, soon eclipsed its parent Sidon, and became one of the greatest and most famous cities of the ancient world: as early as the 11th century before the advent of Christ the Tyrians had become famous for their skill in various manufactures and arts: it was successively besieged by Shalmaneser and Nebuchadnezzar, and in B.C. 322 it was taken and sacked by Alexander the Great: the wars of the Crusades completed its ruin, and its site is now occupied by a miserable village, which exports a little tobacco, cotton, charcoal, and fuel. The downfall and permanent desolation of Tyre is one of the most memorable accomplishments of prophecy which the annals of the world exhibit. **Kisarieh** (Cæsarea), memorable in the early history of Christianity as the place where the Gentiles were first received into the Christian Church. **En Nasirah**, the ancient Nazareth, where the parents of Jesus resided, and where He lived till the commencement of His ministry: it is a small, well-built town, containing about 3000 inhabitants. **Sebustieh**, the ancient Samaria, founded by Omri, king of Israel, B.C. 924, was the capital of the ten tribes till they were carried away by Shalmaneser, B.C. 721: it is now a mere village surrounded by gardens and plantations. **Nablous**, the ancient Shechem and Neapolis, the capital of the Kingdom of Israel before Samaria, and the chief seat of the Samaritan worship till the nation embraced Christianity: the inhabitants are engaged in the manufacture of soap and cotton fabrics. **Gaza**, a thriving town on the S.W. coast, with manufactures of soap and cotton fabrics, and a principal entrepôt for the caravans passing between Egypt and Syria: it was one of the five chief cities of the Philistines; the scene of some of Samson's famous exploits, and of his death; and near it Philip baptised the eunuch of Ethiopia. **Jaffa** (anc. Joppa), the port of Jerusalem, has trade in cloth,

corn, fruits, and coral: Jaffa figures in the history of the Crusades, and was the scene of the faithless massacre of its garrison by Napoleon I. in 1799: it is also celebrated as the place where Jonah embarked for Tarshish, and where Peter had his deeply significant vision. **Damascus,** the principal city in Syria, in a beautiful plain at the eastern foot of Anti-Lebanon: it is regarded by many as the most ancient city in the world, and it is certainly one of the earliest that attained to consequence: at its immense bazaars may always be seen the representatives of all civilised nations, and above 200 merchants are here permanently settled: foreign trade is now carried on by the fine new macadamised road to Beirout, opened in 1863, which is 75 miles in length. **Hamah,** the Hamath of Scripture, one of the most pleasant towns of Syria, carrying on a brisk trade with the Arabs of the desert, and having manufactures of silk, cotton, and woollen stuffs. **Hems,** or Homs, was celebrated for its great temple of the sun: it was also the scene of a decisive battle between Aurelian and the famous Queen Zenobia, A.D. 272. **Palmyra,** the Tadmor of Scripture, built by King Solomon in an oasis in the Syrian Desert, midway between the Euphrates and the Mediterranean, was pre-eminently a city of merchants, who sold to the western world the products of India and Arabia: a few mud cottages mark the spot where "the city of palms" once stood; but the surrounding ruins are the admiration of all travellers through the desert: the most remarkable of these remains consist of portions of a temple of the sun, which had 390 Corinthian columns of white marble, 60 of which are still entire. **Jerusalem,** by far the most interesting and renowned city in the world, having been the site of the most important events recorded in the annals of history: the date of its origin is wholly unknown, but it existed in the time of Abraham, when Melchizedek was its sovereign: it was the capital of the Israelitish empire under David and Solomon, when it became the permanent centre of the true religion: after the division of the empire under Rehoboam it remained the capital of the kingdom of Judah till the time of the captivity, B.C. 588: here the Saviour taught, here He wrought miracles, and here He suffered: after having been the scene of horrors unparalleled in the history of the human race, Jerusalem was abandoned to the Romans, who levelled it to the ground, A.D. 70: it was rebuilt by Hadrian, A.D. 136; captured by the Persians in 614; by the Saracens, under Omar, in 637; by the Crusaders in 1099; recaptured by Saladin in 1187; and has ever since remained under the galling yoke of the Turks: the principal buildings are the Mosque of Omar, on the site of the Temple of Jehovah, and the Church of the Holy Sepulchre, which is erroneously supposed to mark the sacred spot where the crucifixion, burial, and resurrection of our Lord took place. **Hebron** stands on a height, 18 m. S. of Jerusalem: it is perhaps the oldest city in the world that is still inhabited, having been built "seven years before Zoan in Egypt," which was itself a town of venerable antiquity in the days of Moses: with the exception of Jerusalem and Bethlehem, perhaps no place on earth is more hallowed by high and sacred associations. **Beit-Lahm,** formerly Bethlehem or Ephrath, possesses everlasting renown from having been the birthplace of our Saviour, as it had previously been of David, His great ancestor according to the flesh.

MESOPOTAMIA.—**Baghdad,** formerly capital of the Saracen Caliphate, stands on both sides of the Tigris: it is a place of great trade, especially with Aleppo and Damascus: it was long the great emporium of all the surrounding countries, but its commerce has declined since Persia began to receive European goods by Trebizond and the Persian Gulf. **Bassorah,** the great emporium of the Turkish Empire for Eastern produce: ships of

400 tons can come up to the city. **Hillah**, a small town on the Euphrates, 60 miles S. of Baghdad, among the ruins of ancient Babylon, the first theatre of empire, and one of the most magnificent and famous cities of the ancient world. **Diyarbekr**, or Diarbekr—here are some copper-works and manufactures of cotton and silk. **Harran**, the Haran of Scripture, where Abraham and his family resided for a time on their journey towards Canaan. **Orfah**, the famous Ur of the Chaldees, the birthplace of Abraham, Nahor, and Lot. **Mosul**, a considerable town with a brisk and flourishing trade, but chiefly interesting on account of its proximity to the ruins of ancient Nineveh, recently explored with such brilliant results by M. Botta and by our indefatigable countryman, **Layard**: their excavations have brought to light the sculptured remains of several immense palaces of the ancient kings of Nineveh, most of which are deposited in the British Museum. **Arbel** or Erbil, the ancient Arbela, where Alexander the Great obtained his final and decisive victory over Darius, B.C. 331.

ARABISTAN.—**Tor** or Tur, a small town on the caravan route from Egypt to Mecca, where the water is better than at any other place on the Red Sea. A few miles inland is Jebel-at-Tûr, the Mount Horeb of the Old Testament. **Akaba**, or "the descent," a small town, built for the protection of the pilgrim caravans from Cairo to Mecca. Near it, in ancient times, stood **Ezion-Geber**, famous as the port where Solomon and Jehoshaphat built fleets to carry on a commerce with Ophir. Half-way between Akaba and the Dead Sea are the famous ruins of **Petra**, the ancient capital of Idumæa, surrounded by almost inaccessible precipices, and entered by a single narrow gorge. It was a city of great extent and magnificence, and commanded a large share of the traffic of the East. Some fine ruins of its public buildings still remain. **Mecca**, capital of the Hedjaz, and the most celebrated city of Arabia, is famous as having been the birthplace of the arch-impostor Mohammed (A.D. 571), and the cradle of the Mussulman religion. Here stands the Beitulah or "house of God," the grand centre of the Mohammedan world, containing the **Kaaba** or sanctuary, an oblong massive structure of rough stone, alleged to have been built by Abraham, and the object of their deepest veneration. Mohammedans only are allowed to enter Mecca, and all persons of that faith are required to make a pilgrimage hither at least once in their lives. **Jiddah**, the port of Mecca, is the principal commercial entrepôt of W. Arabia. **Medina**, a celebrated city, 245 miles N. of Mecca, was the seat of Mohammed's empire: hither he fled from Mecca in A.D. 622, and that year, termed the Hegira or "Flight," has ever since formed the great era in all parts of the Mohammedan world. Medina contains the Prophet's tomb. **Sana** is a flourishing town, and carries on a great trade in coffee with Persia, India, and Turkey. **Mocha**, a fortified seaport, chiefly celebrated for its coffee, the finest in the world: about 10,000 tons of coffee are exported annually, besides considerable quantities of dates, gums, senna, balm, ivory, and gold-dust.

Capes.—Injeh, the northmost point; Baba, the westmost point; Krio, the most south-westerly point; Anamur, the most southerly point of Asia Minor.

Islands.—Marmora, in the Sea of Marmora; Lesbos, Scio, Samos, Nicaria, Patmos, Cos, Rhodes—all off the west coast of Anatolia; Cyprus, in the Mediterranean, south-east of Asia Minor.

Many of these islands are highly celebrated: *Samos* was one of the chief centres of Ionian civilisation, literature, and art; but it is chiefly

celebrated as having been the birthplace of Pythagoras. *Patmos* will be ever memorable as the scene of the Apostle John's banishment, and as the place where the volume of inspiration was completed. *Rhodes*, one of the largest islands in the whole Archipelago, is well watered and fertile, and celebrated from the remotest antiquity as a seat of commerce, navigation, literature, and the arts; but now reduced to a state of abject poverty by the devastations of war and the tyranny and rapacity of its Turkish rulers: its capital, Rhodes, with a population of 15,000, was in ancient times famous for its huge brazen statue of Apollo, and in modern times it is noted as one of the last retreats of the knights of St John of Jerusalem, who held it from 1310 to 1522. *Cyprus*, a large and celebrated island of the Mediterranean, south of Cilicia, area 4500 sq. miles, population 200,000, of whom about two-thirds are Christians, and one-third Mussulmans; the surface, in many parts sterile and uninhabited, is traversed from east to west by two mountain-ranges, which attain their maximum height in Mount Santa Croce (*Olympus*), 8000 feet above the level of the sea: capital *Lefkosia*, near the centre, with 16,000 inhabitants.

Seas, Straits, and Gulfs.—Black Sea, N. of Asia Minor; Bosporus, Sea of Marmora, and the Hellespont, between European and Asiatic Turkey; Gulfs of Adramyti, Smyrna, Scala Nova, and Cos, W. of Anatolia; Gulfs of Makri, Adalia, and Scanderoon, S. of Asia Minor; the Levant, W. of Syria; the Persian Gulf, S.E. of Mesopotamia.

Mountain System.—(See under "Asia," par. 9.)

River System and Towns.—(See after "Biluchistan.")

Lakes.—Van, in the S. of Armenia; Egerdir, in the S.E. of Anatolia; Tuz-gul, N. of Konieh; Bahr-el-Merdj, near Damascus; Bahr-el-Huleh (*Waters of Merom*), near the sources of the Jordan; Lake of Tiberias, E. of Galilee; Dead Sea (*Asphaltites*), S.E. of Palestine.

Most of these lakes are salt, and have no outlet. *Lake Van*, the largest, has an area of 1200 sq. miles; elevation above the sea, 5467 feet; its waters are salt; it contains many islands, and the only fishery in it is that of a kind of sardines. The *Lake of Tiberias*, or Sea of Galilee, is the most interesting sheet of water in the world, from having been so often navigated by the Saviour and the fishermen of Galilee whom He chose to be His Apostles: here He walked on the billows, and here He stilled the winds and the waves; while on its western shore stood most of the towns which He frequented during His ministry—as Tiberias, Bethsaida, Chorazin, and Capernaum: the lake is traversed by the Jordan from N. to S.; the waters are fresh, and teem with fish; and it has now been ascertained that its surface is 653 feet below the level of the Mediterranean. The *Dead Sea* or Lake Asphaltites—area 360 sq. miles—is also very remarkable as being the saltest body of water known, with the exception of *Tuz-Gul* in Asia Minor; and as occupying the spot where once stood the guilty cities of the plain, Sodom, Gomorrha, Admah, and Zeboim: the waters are so intensely salt that no living creature can live in them, and so buoyant that men bathing in them find themselves floated like cork: as its surface is 1312 feet below the level of the ocean, it is obvious that, even before the destruction of Sodom, the Jordan could not have found its way to the Red Sea, unless indeed that catastrophe was accompanied by a general change of level over the entire country: the probability, therefore, is that there was a smaller lake here previously.

Climate, cold and humid in the mountainous regions, but warm and delightful in the plains and valleys. In the valley of the Jordan, especially in the vicinity of the Dead Sea, the heat of summer is excessive, as also in the southern portion of Mesopotamia. In Palestine and along the Syrian coast rain falls at intervals from the middle of September to the end of April. During the dry season the sky is uniformly clear, and the night-dews heavy. The mean annual temperature at Jerusalem is 62°.6, summer 73°.8, and winter 49°.6. The peaks of Mount Ararat are covered with perpetual snow, as also the loftiest summits of the Lebanon range.

Minerals.—All the useful metals are found in the mountain-ranges. In Armenia, copper, lead, and alum occur, and some silver mines are wrought; rock-salt is found in considerable quantities, and mineral waters abound. In Asia Minor, copper, silver, lead, alum, nitre, and rock-salt. In Syria, iron, coal, and limestone. Palestine is, in general, of a hard contorted limestone formation, abounding in immense caverns. Oolitic limestones and indurated chalk prevail west of the Jordan. Rock-salt abounds near the Dead Sea.

Botany. — The whole of Asiatic Turkey, with the exception of Mesopotamia and Kurdistan, is included within Schouw's third phyto-geographic region, otherwise called the Mediterranean Region, the characteristic vegetation of which is noticed under "Europe," par. 17. The flora of Armenia is said to resemble that of the Tyrol and Switzerland. That of Asia Minor, especially the west and south of Anatolia, is extremely beautiful, and will bear comparison with the vegetation of Sicily and Spain. This is the most celebrated region in the world for the production of opium. In 1867 Smyrna alone exported 4000 chests of opium. In Syria, the olive, fig, citron, orange, pomegranate, and vine, are especially luxuriant in the lower grounds; while natural groves of sycamore, mulberry trees, evergreen oaks, cypresses, and cedars, clothe the uplands. Palestine was that "good land" which God chose for His people, and is celebrated as "a land of wheat and barley, of vines and fig-trees and pomegranates, a land of oil and honey." Mesopotamia is celebrated for its dates, which form an important article of subsistence; and large crops of wheat, barley, rice, and maize, with tobacco, hemp, flax, and cotton, are produced.

Zoology.—The native zoology of Asiatic Turkey does not present any remarkable species that are not equally found in the adjacent extremities of Africa and Asia. It forms, together with Persia, the *Transition Province* of the second zoological kingdom of modern naturalists. (See under "Asia," par. 18.) The lion, once so common, has wholly disappeared from the countries W. of the Euphrates. In Mesopotamia occur the striped hyena, lynx, panther, buffalo, and wild boar; while jackals, bears, wolves, and wild hogs are met with in Asia Minor. The leopard is still found in the interior of Palestine; the Syrian bear in Lebanon; the hedgehog, hare, mole, wolf, in numerous localities. The domestic animals comprise the camel,

dromedary, horse, ass, ox, sheep, and goat. The goats of Angora are celebrated for the fineness of their hair.

Ethnography.—Three distinct races of people are found in Asiatic Turkey—viz., the Turkish, Semitic, and Caucasian. The *Turkish* race includes the Osmanlee, who form 9-10ths of the population of Asia Minor; and the Turcomans, who are very numerous in Mesopotamia and the north of Syria. Both these tribes speak the Turkish language, and profess the Mohammedan faith. To the *Semitic* race belong the stationary Arabs, who constitute the majority in Syria, Palestine, Arabistan, and Mesopotamia; and the Bedouins, or Wandering Arabs, of the Syrian Desert: these speak the Arabic language, and are followers of Mohammed. The Druses, Maronites, and Metualis, in Lebanon and Cœle-Syria, are also regarded as of Semitic origin, together with the Nestorians in the highlands of Kurdistan and Mesopotamia, who are Christians, and speak the Modern Syriac; and, lastly, the Jews, who, to the number of 175,000, are scattered over Syria, Palestine, and other provinces. The *Caucasian* race comprehends the Greeks, who form a large fraction of the population of Syria, Palestine, and Asia Minor, and belong to the Greek Church: the Armenians, who constitute about 1-7th of the population of Armenia, speak the Armenian language (which is radically connected with the Persian), and profess a corrupt form of Christianity; the Kurds, who are generally Mohammedans, with a language resembling Modern Persian; and the Yezidees, or Devil-worshippers, in the north of Mesopotamia.

ARABIA.

Boundaries.—N., Turkey in Asia; W., Arabistan; S. and S.E., the Gulf of Aden and the Arabian Sea; E., the Gulf of Oman and the Persian Gulf. Lat. 12° 40′—33° N.; lon. 36° 30′—59° 49′ E.

Muscat (cap. of the dominions of the Imam of Muscat), on the eastern frontier, forming the key to the Persian Gulf, and situated on the Tropic of Cancer, which divides Arabia into two nearly equal parts, is in the same lat. as Assouan, Bhopal, Burdwan, Canton, and Havana in Cuba.

Area and Population.—The area, including Arabistan, is estimated at 1,219,748 sq. m., and the population at 8,000,000. Arabia has, therefore, ten times the area of the British Isles, but only one-sixth of their population. The extreme length of the peninsula, from Suez to Ras-al-Had, is 1800 m.; and the extreme breadth, from the Strait of Bab-el-Mandeb to Cape Mussendom, nearly 1200 m.

Surface and Mountains.—This immense peninsula, the *Jesiret-el-Arab* of the natives, and *Arabistan* of the Turks and Persians, consists for the most part of a huge plateau, which attains in some

places the height of 8000 ft. A great mountain-chain, prolonged from the Syrian Lebanon, extends along the entire W. coast to the Strait of Bab-el-Mandeb; and another, nearly at right-angles with it, skirts the S. coast to the province of Oman: here the Jebel-Akhdar, the culminating point of this chain, attains the elevation of 6010 ft. Between these ranges and the western and southern coasts runs a narrow belt of arid lowland, called the *Tehama*, extremely unproductive; but the slopes of the mountains, between this belt and the plateau, are highly fertile and richly cultivated. The whole interior is desert and hopelessly barren, with the exception of a few small oases. There are no rivers, properly so called, in Arabia; but springs partly supply the deficiency, and impart to the oases around them a surprising degree of fertility.

Political Divisions.—Ptolemy divided the country into Arabia Petræa, in the N.W.; Arabia Felix, in the W. and S.; and Arabia Deserta, embracing all the remainder; but this partition is unknown to the inhabitants, who recognise only the following divisions:—

HADRAMAUT.—Makalla 5, Shahr 6, Aden 20 (S. coast).

OMAN.—Muscat 50, Muttra 20, Sohar 9 (G. of Oman).

LACHSA.—Lachsa 15, (Aftan), El Katif 6, Grane 10 (Persian Gulf), Manama 5 (I. Bahrein).

WAHABITE EMPIRE.—Riyad, Deraieh 15 n. (Aftan), Anezeh (N.W. of Deraieh).

Descriptive Notes.—**Makalla**, the so-called cap. of Hadramaut, has a good harbour, and affords supplies to ships on their way to India. **Aden**, about 100 m. E. of the Strait of Bab-el-Mandeb, is a valuable possession of Great Britain, as it forms the chief coaling station on the steamboat passage to India. It was captured by the British from the native Sultan in 1839, and contains now about 20,000 inhabitants, including a garrison of 2000 Indian troops. It is situated on the crater of a volcano, 128 feet above the sea, and its fortifications are reckoned impregnable. **Muscat**, a fortified maritime city, capital of the dominions of the Imam, who is the most powerful sovereign in Arabia. It is the grand commercial emporium of eastern Arabia, and has a population of about 50,000. **Muttra**, an important town with shipbuilding docks. **Sohar** has a considerable trade in fruits. **Lachsa**, or Fouf, is well watered, and surrounded by plantations of date trees. **Riyad**, or Riad, cap. of the country of the Wahabees, or Mohammedan reformers, is situated in the most elevated part of the interior (called the Nejd), and is well watered.

Capes, Islands, and Gulfs.—See under "Asia."

Climate.—The climate of Arabia is exceptionally hot, and at the same time the driest in the world. The year is divided into three seasons—summer, spring, and winter. The mean annual temperature of the entire peninsula is reckoned at 80° Fahr.; that of January from 60° to 70°; and that of July from 90° to 95°. The *Tehama*, or coast region skirting the Red Sea, is celebrated as forming part of the hottest region of the earth's surface. In the elevated interior, however, the temperature is more moderate. Though Arabia is

included in the great rainless zone which extends from the Atlantic, through the Sahara and Egypt, to the Pacific Ocean, yet in the elevated interior rain falls copiously for three months in the year. The rivers are seldom perennial: they flow only in winter, while in summer their beds form the only roads across the country. During the intense summer-heat, the hot wind of the desert, called the simoom or samiel, blows from the interior in all directions.

Minerals.—These are little known, but comprise the onyx, emerald, blue alabaster, granite, limestone, basalt and other volcanic productions; iron in Yemen; silver and lead in Oman; rock-salt near Loheia and in several other localities.

Botany.—The S.W. angle of Arabia comprises Schouw's "Region of Balsamic Trees." Here the vegetation is tropical, the greater part consisting of Indian forms. There are many trees yielding gums and balsamic resins; and the cultivated plants are maize, millet, date-palm, cocoa-nut, fig, apricot, peach, plum, apple, quince, vine, coffee-tree, tamarind, sugar-cane, ginger, cotton, and indigo. The entire remainder of the country belongs to the same author's "Desert Region." Here the flora is very poor, and cultivation is confined to the oases, where the date-tree comes to perfection. Dhurra, wheat, and barley are the principal cultivated plants, together with certain Indian and S. European fruits.

Zoology.—Wild animals are few in number, on account of the scarcity of wood and water. The principal beasts of prey are the panther, ounce, and hyena. Apes are numerous in Yemen. The wild ass of the desert is noted for its size and strength. The ibex inhabits the rocky heights, the antelope the plains, and the jerboa and lizard the barren sands. Among domestic animals the camel of Oman is celebrated for its beauty, and the dromedary is a useful beast of burden. The horse, which has been carefully bred for several thousand years, forms an important branch of traffic.

Ethnography.—The people of Arabia are a very mixed race, being partly descended from Ham and partly from Shem, the sons of Noah. Ham's eldest son was Cush, and the Cushites appear to have been the earliest inhabitants of Southern Arabia, from which they sent out colonies across the Red Sea, and peopled Ethiopia (Abyssinia). The descendants of Shem are principally the Joktanites or Kachtanites, who, according to the Arabian geographers, settled in Yemen soon after the confusion of tongues; the Ishmaelites, who settled E. and S.E. of Palestine; the Midianites and Amalekites, who in Moses' time occupied the peninsula of Sinai; the Edomites and Nabatheans, who peopled Idumea, and had Petra for their capital; the Nahorites, who dwelt in the "land of Uz;" the Moabites and Ammonites, who occupied the territory E. and N.E. of the Dead Sea. These and many others, whose precise localities cannot now be determined, came in the course of ages to be thoroughly amalgamated, and to be known under the general designation of Arabs—a people whose physical and mental characteristics are very strongly and decidedly marked. In

physical conformation the Arab ranks so high, that by many he is regarded as furnishing the prototype or model form of the human species. The Arabs are divided into two classes — nomads or Bedouins, who lead a wandering life, as the exigencies of their flocks require; and the settled Arabs, or dwellers in towns, who are engaged in commerce and agriculture.

Language.—The Arabic language, so remarkable for its copiousness and beauty, is the most important representative of the great Semitic family of tongues (see "Asia," par. 19). Its roots are in general identical with those of the Hebrew; and its inflections, though greatly more varied and numerous, bear to that language the closest affinity. It is the vernacular language not only of Arabia, but also of Syria, Mesopotamia, Egypt, Nubia, Northern Barbary, part of Persia, and some places on the Malabar and Coromandel coasts. It is also extensively used as the language of religion and commerce wherever the Mohammedan faith prevails; and in it is written the Korán, the sacred book of the whole Mohammedan world.

Religion.—Ever since the time of Mohammed, Islamism has been the only religion known in Arabia. It has completely extirpated the Sabaism and Judaism which had previously been the prevailing forms of worship.

Government.—The Hedjaz, Yemen, and Arabia Petræa, are nominally subject to Turkey, and the province of Oman to the Imam of Muscat, who maintains a military force of 20,000 men and a large navy. The island of Kishm and the adjoining coast have been ceded by Muscat to Persia. The rest of the country is shared among an uncertain number of petty states. The government of the Bedouins is strictly patriarchal in each of the numerous tribes, the chief power in each tribe being vested in a chief or *sheikh*, whose office is hereditary, but who may be deposed by an ambitious kinsman if, by tyranny or incapacity, he should become unpopular.

Manufactures and Commerce.—The former are at a lower ebb than in any other semi-civilised country. The leading object of industry is the raising of camels, horses, goats, sheep, &c.; but the women weave hair tent-covers and bags. In Oman are made silk and cotton turbans, sashes, woollen and hair cloaks, canvass, arms, earthen jars, and gunpowder. In the western and southern provinces, coarse linens, woollen fabrics, rude matchlocks and other arms, are manufactured chiefly by foreigners. The pearl fishery of the island Bahrein, on the coast of Lachsa, is perhaps the most extensive and valuable in the world, employing 1500 vessels, and yielding annually pearls to the value of about £150,000. The transit trade of Arabia, though greatly inferior to what it was in ancient times, is still considerable; and large quantities of merchandise are brought by caravans and by sea from the surrounding countries, partly for home consumption, and partly for sale to the numerous pilgrims who resort annually to Mecca and Medina. The Kuria Muria islands, which belong to Great Britain, contain rich deposits of guano.

PERSIA.

Boundaries.—N., Western Turkestan, the Caspian Sea, and Transcaucasia; W., Asiatic Turkey; S., Persian Gulf; E., Biluchistan and Afghanistan. Lat. 26° 27′—40° N.; lon. 44°—61° E. Ispahan, the former capital, near the centre of the kingdom, is in the same latitude as the Bermudas, Madeira, Tripoli, Acre, Amritsir, and Nankin.

Area and Population.—The area is estimated at 648,000 sq. m., and the population at 5,000,000. Persia is therefore six times the size of Great Britain, with only one-fourth its population. The population is believed to be steadily declining in numbers, owing to the ravages of the plague, the general absence of sanitary laws, and the results of polygamy.

Surface.—The central portion is an elevated plateau, about 3000 ft. high, and is traversed by mountain-ranges which in many places attain to the height of 7000 or 8000 ft. The Paropamisam Mts. (16,000 ft. high), and the Elburz (highest summit, the volcano of Demavend, 18,464 ft.), form its northern frontier; while the south-western and southern are formed by the Zagros Mts., and a chain running from them in a S.E. direction, parallel to the Tigris, skirting the Persian Gulf, and finally subsiding in the great plateau of the interior. Many fertile tracts exist in the W. portion of this elevated region, as also on the shores of the Caspian; but nearly all Eastern Persia is an irreclaimable salt desert, forming a part of that rainless and sterile zone which extends from the great African desert to the frontiers of the Chinese empire.

Political Divisions.—Persia comprises the following fourteen provinces:—

ASTRABAD.—Astrabad 5 (Caspian).

MAZANDERAN.—Saree 5, Balfrush 5, Amol 35 n. (Caspian).

GHILAN.—Resht 50 n., Lahijan 7 (Caspian).

AZERBIJAN.—Tabriz 200 (Aji), Urumiah 25 n., Maragah 20 n., Dilman 15 n. (L. Urumiah), Khoi 30 (Kotura, *affl.* Kur).

PERSIAN KURDISTAN.—Kermandshah 30, Sinna 25 (*affl.* Kizil Ouzan).

LURISTAN.—Korumabad 5 (Koon, *affl.* Kerkhah).

KHUZISTAN.—Shuster 8 (Karun), Dizful 15 (Dizful), Shus or Susa (Kerkhah).

FARSISTAN.—Shiraz 25 (Rocknabad), Persepolis (Bundamir), Fasa 18, Darabjerd 20 (S.E. Shiraz), Bushire 18 (Persian Gulf).

LARISTAN.—Lar 12 n., Nackiloo, Gombroon 5, Jask (Persian Gulf).

KOHISTAN AND W. MEKRAN.*—Bunpoor (interior), Choubar (S.E. coast).

KERMAN.—Kerman 30 (E. L. Bakhtegan).

YEZD.—Yezd 50 (140 miles N. Kerman).

* Formerly belonging to Biluchistan.

KHORASSAN.—Meshed 100 (Tejend), Nishapur 8 (W. of Meshed), Kabooshan 15 (Attruck).

IRAK-AJEMI.—Teheran 80 n. (Kehveh), Kasbin 40 n. (Kizil-Ouzan), Zenjan 15 (Zenjan), Hamadan 40 n. (Kara-su), Ispahan 6) (Zendarud), Khonsur 12 (N.W. Ispahan), Kashan 30, Koom 8 (S.W. Teheran).

Descriptive Notes.—**Astrabad**, though admirably situated for commerce, has very little trade; it is so unhealthy as to be generally called "the city of the plague." **Balfrush** contains numerous bazaars and caravanserais, and has a large general trade. **Resht**, a well-built town, with extensive bazaars. **Tabriz**, surrounded by magnificent gardens, is the entrepôt of the trade between Persia, Russia, India, Constantinople, and the Black Sea. **Urumiah** claims to be the birthplace of Zoroaster. **Maragah**, noted for the cave-temples in its vicinity, and for its white marble, which, when cut thin, is capable of being employed as a substitute for window-glass. **Khoi**, one of the finest towns in Persia; here Shah Ismael totally defeated the Turks in 1514. **Kermandshah**, a prosperous town, with manufactures of carpets, swords, and muskets. **Sinna**, a romantic, flourishing town, in a deep, secluded valley, filled with orchards. **Shuster** was nearly depopulated by the plague in 1832. **Shus** (Susa), probably the Shushan of the Book of Daniel, is said to contain the bones of that prophet: here Alexander and his generals celebrated their nuptials with the Persian princesses, B.C. 325: in the extensive ruins around are found bricks and pottery with cuneiform inscriptions. **Shiraz**, at one time the capital of Persia, is the birthplace of the famous poets Saadi and Hafiz. **Persepolis**, the ancient capital of the Persian empire: here Alexander the Great found immense riches on his journey eastward, B.C. 331, and at the end of a revel set fire to the palace with his own hand: numerous tombs, cut out of the solid rock, are found in the adjoining mountains, and the ruins of the city are rich with inscriptions in the arrow-headed character. **Murghab** (Pasargadæ); here Cyrus the Great gained his decisive victory over Astyages, B.C. 559: the ruins contain numerous ancient remains, among which is the tomb of Cyrus. **Bushire**, more properly **Abu-Shehr** ("father of cities"), is the principal seaport of Persia on the Persian Gulf, and maintains an extensive trade with British India. **Lar**, formerly capital of an Arabian kingdom, has manufactures of arms, gunpowder, and cotton fabrics, and the finest bazaar in Persia. **Nackiloo**, a small town, busily engaged in the pearl-fishery. **Kerman**, carries on a trade in wool, which is celebrated for its fineness. **Yezd**, a fortified city, contains spacious bazaars, and has manufactures of silk, cotton, and woollen goods. **Meshed**, in a fertile plain, enclosed by strong walls, maintains an active trade with Bokhara, Herat, and other places. Here is a magnificent mausoleum of Imam Reza, and of the celebrated Haroun-al-Raschid, caliph of Bagdad, whose reign was the Augustan era of the Arabian dominions. He was contemporary with Charlemagne, and died in 809. **Nishapur**, celebrated for its turquoises, obtained from mines in the vicinity. **Teheran**, superseded Ispahan as the capital of Persia in 1798. It consists of splendid edifices and magnificent gardens, intermingled with wretched mud-built huts. In summer the heat is so intense that the Shah, and all who have the means, desert the city, and encamp on the plain of Sultania, about 150 miles to the N.W. of it. About 25 miles E. of Teheran are the extensive ruins of **Rhagæ**, the capital of the Parthian kings, and the most important city in Media, the contemporary of Nineveh and Ecbat

ana, and the birthplace of Haroun-al-Raschid. **Kasbin**, a large, fortified, and commercial city, 90 miles N.W. of Teheran, celebrated for its grapes and pistachio nuts. **Hamadan**, the ancient Ecbatana, at one time the capital of the Median kingdom, and afterwards the summer residence of the Persian and Parthian kings. It is the Achmetha of the Book of Ezra, and contains the reputed sepulchre of Esther and Mordecai. **Ispahan** (Aspadana), one of the most important cities in Persia, of which it was formerly the capital. Under Shah Abbas the Great, who died in 1627, it was one of the richest and most populous cities in Asia; but during the Afghan invasion in the eighteenth century its walls were destroyed, and the city reduced to a state of decay. It now presents a melancholy spectacle of deserted halls, ruined houses, and neglected gardens. It has numerous manufactures of woven fabrics, gold and silver wares, firearms, sword-blades, glass, earthenware, &c., which are exported to India and most parts of Western Asia. **Kashan**, a large town, with a royal palace and numerous manufactures.

Islands.—Karak, N.W. of Bushire; Kishm or Kishma, and Ormuz, at the entrance of the Persian Gulf.

Karak alone belongs to Persia, the others being subject to the Imam of Muscat. Karak is of coral formation, is very fertile, and has a pearl-fishery on its N. coast. *Kishm* is the largest island in the Persian Gulf; is 70 m. long, with an average breadth of 12 m.; population 5000, who are chiefly Arabs. *Ormuz* is only a barren rock, but important as having been one of the richest commercial emporia in the East when in the possession of the Portuguese. On its N. coast is a town with a fort and a good harbour. This was once a large and splendid city, but its trade is now transferred to Gombroon.

Seas, Bays, and Straits.—The Caspian Sea, forming a part of the N. frontier; Persian Gulf, and Gulf of Oman, between Persia and Arabia; Strait of Ormuz, connecting the Persian Gulf with the Gulf of Ormuz.

Mountains.—For the Elburz and Zagros ranges, see under "Surface;" and for the RIVER SYSTEM, under "Biluchistan."

Lakes.—Urumiah in Azerbijan; Bakhtegan and Mahluja in Farsistan.

Lake Urumiah, 85 m. long and 25 m. broad, with water intensely salt, and incapable of supporting any of the higher forms of animal life, is famous for its zoophytes.

Climate.—The climate of Persia presents the greatest extremes of heat and cold. In the interior the summers are excessively hot and dry, and the winters rigorously cold. Scarcely any rain falls, and trees refuse to grow, except near watercourses fed by springs. N. of the Elburz Mountains the climate is almost tropical; a dry and rainy season regularly alternate; and vegetation presents a luxuriance not often seen in much lower latitudes. The district lying between the table-land and the Persian Gulf is burnt up in summer with a scorching heat. It is called the *Duhtistan*, and greatly resembles the *Tehama* of Arabia. The scarcity of water is, indeed, the greatest disadvantage under which Persia lies.

Minerals.—Copper in the N. provinces; lead in Fars and Kerman;

rock-salt, coal, iron, naphtha, in many places. The most celebrated minerals of Persia are the turquoise or calaite, found at Nishapur, and the fine white marble of Maragah, so translucent as to be employed in windows.

Botany.—The interior is chiefly a desert, devoid of vegetation except in the oases, where the date-tree attains unusual luxuriance. The principal forests are confined to the lowland region between the Caspian and the Elburz Mountains, where are found the oak, beech, elm, walnut, box, cypress, cedar, &c. Here also the orange, melon, pomegranate, cotton plant, mulberry, sugar-cane, and vine come to perfection. The grains raised are rice, barley, and wheat; and the principal other products are tobacco, opium, assafœtida, gum-ammoniac, and other drugs, with madder, gall-nuts, &c.

Zoology.—Persia belongs zoologically to the Transition Province of continental Asia, a province which forms a connecting link between the three zoological kingdoms of the Old World (p. 57). Among the wild animals are the lion, leopard, bear, panther, wild-boar, tiger-cat, lynx, hyena, wolf, jackal, porcupine, and the booz or mountain goat. Domestic animals include most of the species common in Europe, with the camel and argali sheep. The horses are very superior, and, with cattle and sheep, compose the principal wealth of the wandering tribes.

Ethnography.—The population is very mixed: that of the towns and settled districts is a race descended from Persians, Turks, Tartars, Georgians, Armenians, Arabs, and all the other nations who have at different periods held sway in the country. The Parsees, who appear to preserve more fully than the rest their purity of descent from the ancient Persians, are now nearly confined to the city of Yezd and some towns in Kerman. The nomadic tribes consist of Arabs in the S., Turcomans, Moguls, Ezbeks in the E. and N.E., and Kurds in the W. The settled tribes, who may be regarded as in general the descendants of the original inhabitants, are called Tajiks, and probably number about 3,000,000; while the wandering population are designated Ilyats, and do not exceed 2,000,000.

The *Languages* are as numerous as the races by whom the country is peopled, but those most predominant are the Persian and Turkish. The latter prevails in the northern and western provinces; but even here the natives are also acquainted with Persian, which is invariably the vernacular of the Tajiks in all parts of the country. The origin of the Persian dates from the invasion of the Arabs in the seventh century. Prior to that period various idioms prevailed throughout the Persian empire, of which the principal were the Pehlvi, the Farsi or Parsi, and the Deri. The Pehlvi was closely allied to Chaldee, and was the dialect of Media; while the Parsi, together with its polished court-dialect the Deri, was the language of Persia proper. But the primitive type of the whole group is undoubtedly the Zend, a language closely allied to the Sanscrit. The Persian is remarkable for its softness and harmony, which admirably adapt it for the lighter forms of poetry; and it contains numerous works both in literature and science. Of the numerous poets who have adorned the language, Firdúsí, Ansarí, Anwarí, and especially Saadí and

Hafiz, natives of Shiraz, are the best known to Europeans. In the department of history it contains many works which would do honour to any age or people, as those of Mirkhond, Tabari, Abu-Said-Abdullah, and Mohammed Kásim Ferishtá. The works on ethics, theology, and jurisprudence are very numerous, and those on grammar are of a superior order.

Religion.—The Tajiks are Mohammedans of the Sheah sect, who reject the authority of the first three caliphs. The Ilyats, on the contrary, are of the Sunnite sect: while the Parsees or Guebres are fire-worshippers.

The **Government** is despotic: the sovereign, who is called the *Shah*, is assisted by a grand-vizier, who exercises control over the military and foreign departments; and by a lord high treasurer, who superintends the revenue and home arrangements. The chiefs of the nomadic tribes, who are called Sheiks, are nearly independent. The annual *Revenue*, which is chiefly derived from land and capitation taxes, custom duties, tribute from wandering tribes, &c., has been estimated at about £2,000,000 sterling. The *Armed Force*, which is very variable in amount, has been recently estimated at 105,000 men, many of whom have received European discipline.

Manufactures and Commerce.—The principal manufactures are silk fabrics of all kinds (which, since 1863, have greatly fallen off, owing to disease among the silkworms), jewellery, attar of roses; and in the principal cities, shawls of goats' hair, carpets, felts, cotton cloths, cutlery, and arms, glass, pottery, leather, and saddlery. The commerce of Persia is extensive, notwithstanding the absence of roads. It is chiefly carried on with Russia by the Caspian; and with British India by way of the Persian Gulf. The chief exports are the native products already enumerated, together with copper wares, saffron, specie, skins, and sabres. Imports comprise indigo, calicoes, sugar, rhubarb, diamonds and other precious stones, from India, and a variety of manufactured goods from Europe. The annual value of exports and imports together amounts to about £4,000,000. The principal ports are Bushire and Gombroon on the Persian Gulf, and Enzeli, Balfrush, and Astrabad, on the Caspian. The maritime traffic on the Caspian is entirely in the hands of the Russians, while that of the Persian Gulf is shared in by the English and the Sultan of Muscat.

AFGHANISTAN.

Boundaries.—N., Western Turkestan; W., Persia; S., Biluchistan; E., the Panjab, from which it is separated by the Suliman Mountains. Lat. 29° 50′—34° 30′ N.; lon. 62°—71° E. Kandahar, near the centre of the country, is nearly in the same latitude with Austin the capital of Texas, Savannah, Marocco, Alexandria, Jerusalem, Lahûr, and Shanghae.

Area and Population.—The area is estimated at 258,500 sq. m., and the population at 4,000,000; or twice the area of the British Isles, with less than one-seventh of their population.

Surface.—Four-fifths of the country consist of rocks and mountains; the S.W. is a desert, with an elevation of from 3000 to 5000 ft., resembling the deserts of Arabia, but among the mountains there are many fertile valleys. The Suliman Mountains, on the eastern frontier, separating Afghanistan from the valley of the Indus, attain in Takht-i-Suliman ("Solomon's Throne") an altitude of 11,301 ft. (see under "Asia," p. 349).

Political Divisions.—These are five in number—viz., Kabul, Balkh, Herat, Kandahar, and Seistan.

KABUL.—Kabul 60, Jelalabad 3 (Kabul, *affl.* Indus), Charikar 5, Istalif 15 (*affl.* Kabul), Ghuznee 10 (Ghuznee), Bamian (in the Bamian Pass).

BALKH.—Balkh 2 (Adersieh), Khulum or Tash-Kurghan 10 (Khulum, *affl.* Amoo-Daria).

HERAT.—Herat 60 (Heri-rood), Subzawur 5 (Haroot, *affl.* Lake Seistan).

KANDAHAR.—Kandahar 100 (Urghandab, *affl.* Helmund).

SEISTAN.—Now mainly belongs to Persia; no towns.

Descriptive Notes.—**Kabul** or Cabool is celebrated above all other cities for its excellent fruits. It has an extensive transit trade between Russia, China, Turkestan, and India, and was the scene of the treacherous outbreak of the chiefs in 1842, when 3800 British soldiers and 12,000 camp-followers were massacred. **Jelalabad**, famous for the heroic and successful resistance made by the British troops under Sir R. Sale in 1841-2. **Ghuznee**, a famous city, surrounded by a lofty wall flanked with numerous towers, is the entrepôt of the trade between Afghanistan and the Panjab. In the beginning of the eleventh century it was the capital of an empire reaching from the Ganges to the Tigris, and from the Jaxartes to the Indian Ocean. **Bamian**, in the celebrated pass which leads from Afghanistan to Independent Turkestan—the only known pass across the Hindu Kush practicable for artillery. **Balkh**, capital of a province of same name (the ancient kingdom of Bactria), now forming a part of Afghanistan. It was anciently one of the most flourishing cities of the East, and the emporium of the trade between India, China, and Western Asia. On account of its high antiquity it is styled the "mother of cities." The ruins of the ancient city cover 20 m. in circumference. **Herat**, long the capital of the extensive empire ruled by the descendants of Timur, is still a post of great military and commercial importance. It is the centre of a great trade between India, China, Tartary, Afghanistan, and Persia, and has several manufactures. It is regarded as the key of India from the west, and has alternately belonged to Persia and Kabul. **Kandahar**, a fortified city, and the winter residence of the Khan, has various manufactures, and a considerable transit trade between India and Persia. It is very ancient, having been probably founded by Alexander the Great. It was taken by Tamerlane in 1384, by Shah Abbas of Persia in 1620, and was held by the English from 1839 to 1842.

Lakes.—Seistan or Hamun in the west, and Ab-istada in the east

Climate.—The summer heat is overpowering in the valleys and lower levels. The snows of winter lie long and deep in the mountainous parts, and the cold is very intense. This was the main cause of the sufferings of the Anglo-Indian army during their disastrous retreat in January 1842. Scarcely any rain falls in the western part of the country, where the climate greatly resembles that of Persia.

Minerals.—Gold, silver, mercury, iron, lead, plumbago, copper, antimony, coal, sulphur, naphtha, alum, and rock-salt.

Botany.—Vast regions are utterly desert, and timber is generally scarce. The most common trees are pines of various species, extending on the mountain-sides to an elevation of 10,000 ft. The cypress attains a gigantic size, and the oak and wild olive are found at great heights. The vegetation of the uplands resembles, in general, that of Europe; and that of the lowlands the flora and cultivated plants of India, as rice, cotton, sugar-cane, millet, maize, and turmeric.

Zoology.—The fauna of Afghanistan belongs to the Transition Province of modern zoologists (p. 57). The wild animals are neither numerous nor very formidable, with the exception of wolves and a small species of lion found near Kabul. Birds comprise the eagle, hawk, heron, crane, and many other European species. The principal reptiles are turtles and venomous serpents. The Bactrian or two-humped camel and dromedary are the usual beasts of burden, while other domestic animals comprise the ass, mule, goat, dog, and cat. The sheep is remarkable for the size of its tail, consisting of a mass of pure fat, and weighing from 10 to 12 lb.

Ethnography.—The Afghans, or Pushtaneh, as they designate themselves, are a warlike, semi-barbarous people, and probably the aborigines of the country. They are descended from an ancient Aryan race, and are allied to the Iranians or Persians. The Pushtoo language forms an important branch of the Medo-Persic group of tongues, which is itself a member of the Indo-European family. Many of its roots are Persian, some can be traced to the Zend and Pehlvi, while others are from an unknown source. Grammatically it more resembles the Zend than the Persian. It is a harsh, unpolished tongue, strongly contrasting with the soft musical language of Persia. The Pushtaneh number about 3,000,000, and are all Mohammedans of the Sunnite sect. The other principal tribes are the Huzarehs, inhabiting the wild highlands of the north, of Tartar or Mongolian descent, greatly resembling the Chinese in appearance, and generally Mohammedans of the sect of Ali; the Tajiks and Duranis in the west, Hindus in the south, and Eimauks, Uzbeks, and Biluchees, amounting together to upwards of a million.

Government.—The government of Afghanistan was formerly a monarchy, the crown being hereditary in a branch of the Durani tribe, one of the four principal branches into which the Pushtaneh are divided; but the country is now divided into four separate and

independent principalities—viz., those of Kabul, Kandahar, Herat, and Balkh. Seistan is subdivided into a number of petty chiefships, most of which now acknowledge the supremacy of Persia. The whole Afghan force, which is chiefly cavalry, amounts to about 16,000 men, and the combined revenue to about half a million sterling.

Manufactures and Commerce.—The manufactures are unimportant, and confined chiefly to woollen and cotton stuffs for home consumption. The transit trade is considerable, and carried on by means of camels and dromedaries, formed into caravans, as the roads are not adapted to wheeled carriages. The principal foreign trade is conducted with India, Persia, and Turkestan. The chief exports consist of horses (which are reared in great numbers and transported to India), furs, shawls, chintz, indigo, madder, assafœtida, tobacco, fruits, and Herat carpets. The imports are numerous, comprising coarse cotton cloths, muslins, silks, brocades, horses, gold, silver, broadcloth, cutlery, and slaves from Arabia and Abyssinia.

BILUCHISTAN.

Boundaries.—N., Afghanistan; W., Persia; S., the Arabian Sea, along which it extends for 600 m.; and E., Sindh. Lat., 24° 50′—30° 20′ N.; lon., 62° 40′—69° 18′ E. Kelat, the cap. (lat. 28° 50′), is on the same parallel with the mouth of the Mississippi, the Peak of Teneriffe, Suez, Bushire, and Delhi.

Area and Population.—The area is estimated at 110,000 sq. m., the population at 1,000,000; being one-fourth larger than the British Isles, with only one-fifteenth of their population.

Surface.—Nearly the whole country is mountainous, rugged, and elevated, except in the N.W. and along the coast; and water is deficient, being absorbed by the deserts. The region along the S. coast is termed the desert of Makran, which resembles the Tehama of Arabia and the Duhtistan of Persia. The Washutee Mountains, in the centre, attain in Takkatu, one of their summits, an elevation of 11,000 ft.; and the Hala Mountains, between it and Sindh, reach the same altitude.

Political Divisions.—Biluchistan now consists of six provinces—viz., Kachh-Gundava in the N.E.; Sarawan, W. of Kachh-Gundava; Kelat, S.E. of Sarawan; Jhalawan, S. of Kelat; Lus, in the S.E.; and Kedji Makran, in the S.W.

Towns.—Kelat 12 n., Zehree 12 n., Gundava 20 n. (Gundava, on Indus), Dadur 3 (Naree), Sonmeanee 2, Bela 6 (Puralli), Sarawan 3 (Bale), Kedje 10, Punjgu (Dasti).

Descriptive Notes.—**Kelat**, a strongly-fortified town surrounded by mountains, and well supplied with water, was the stronghold of Nadir Shah. In 1839, and again in 1841, it was stormed and taken by the British. It has a considerable transit trade, with some manufactures of arms. **Dadur**, near the S.E. entrance of the celebrated Bolan Pass—one of the chief roads from India to the west—is said to be one of the hottest places known. **Bela**, the capital of Lus, is built of mud-houses. **Sonmeanee**; near it is the celebrated mud-volcano of Hinglaj. **Sarawan**, capital of province of same name, a small town surrounded by a mud-wall, in a barren district. **Kedje**, the capital of Makran, once a place of considerable importance, is now greatly decayed. **Bunpur**, capital of Kohistan, a small ill-built town, in a sterile region, and defended by a fort, belongs now to Persia.

Climate.—The climate in the higher parts is extremely cold in winter. Snow falls from October to the end of February, and in some places remains on the ground for two months. In the plains and valleys the heat in summer is oppressive. In February and March a good deal of rain falls; and from the latter month to September is the dry season.

Minerals.—The mineral wealth of the country is considerable, including gold, silver, lead, iron, copper, tin, antimony, sulphur, alum, sal-ammoniac, and many kinds of mineral salts and saltpetre, but it is not turned to any practical account.

Botany.—The country belongs, botanically, to Schouw's "Region of Balsamic Trees," in which the vegetation is of a tropical character, including trees yielding gums and balsamic resins (p. 55). The oak, ash, fir, and other trees common in Europe, are unknown. In the low and watered plains of the N.E. are grown rice, cotton, indigo, tobacco, sugar-cane. Rhubarb and the assafœtida plant (the latter of which is eaten by the inhabitants) abound in some districts, while on the mountain-sides the tamarisk and babul attain the size of large trees.

Zoology.—The fauna of Biluchistan closely resembles that of Persia, both being embraced in the Transition Province of naturalists. Wild animals are numerous, especially leopards, wolves, hyenas, jackals, tiger-cats, and foxes; but, except on the eastern frontier, lions and tigers are rarely seen. There are also wild dogs, wild asses, antelopes, deer, hares, mongooses, mountain-goats, and wild hogs, with various kinds of monkeys. The other animals, wild and domestic, are for the most part the same as those of Afghanistan.

Ethnography.—Two races of people are found in Biluchistan—the Biluchees and Brahus. The former, inhabiting the western part of the country, are a rude, nomadic, pastoral people, supposed to have sprung from the Seljukian Turks. They are Mohammedans of the Sunnite sect, and speak a very corrupt dialect of the Persian, termed Biluchee, which contains no literature, save a portion of the Scriptures translated into it by the Serampore missionaries. The Brahus inhabit chiefly the eastern provinces, and are most numerous m

Jhalawan. Like the Biluchees, they are a pastoral people, but less addicted to rapine and predatory violence; they speak a language of Dravidian structure, allied to those of the Dakhan, but hitherto not reduced to writing. They are Mohammedans of the sect of Omar.

Government.—The eastern provinces are under the uncertain authority of the Khan of Kelat; the remainder being held by tribes who acknowledge no subjection except to their own chiefs. His armed force amounts to 3000 men, and his revenue to £30,000. A large portion of the S. & W., including the seaport town of Choubar, belongs now to Persia.

Commerce.—The trade of Biluchistan is usually conducted by means of caravans, and is almost wholly in the hands of Hindus. Sonmeanee and Choubar are the only seaports—the latter now belonging to Muscat. Agriculture is not much pursued, but the Brahus rear large numbers of goats and black cattle. The principal exports are butter of ghee, hides, wool, drugs, dried fruit, fish, corn, and vegetable oil; and the chief imports are British and Indian manufactured goods, rice, spices, dye-stuffs, and slaves (for Muscat).

Table of Rivers and Towns.—The following table contains the river-system of Asiatic Turkey, Arabia, Persia, and Biluchistan, and shows the natural position of all the towns belonging to those countries contained in this work, commencing at the S.E. angle of the Black Sea, crossing the Isthmus of Suez, and then following the coast:—

Rivers.	*Cities and Towns.*
N. Co. Trebizond,	Rizah, TREBIZOND.
Yeshil Irmak,	Amasia, Tokat, Marsivan.
Kizil Irmak,	Kankari, Kaisarieh, n., SIVAS.
Kara Su, *l.*	Kastamuni.
Devrek, *l.*	Tosia.
N. Co. Anatolia,	Sinope, *Eregri.*
Sakaria,	Kutaya.
Murtadabad,	Angora.
Bosporus,	Scutari.
Sea of Marmora,	Brusa, Muhallitch, n.
W. Co. Anatolia,	SMYRNA, Scala Nova.
Kodus,	Manissa.
Phrygius,	*Ak-Hissar* (*Thyatira*).
Cogamus, *l.*	Alla Shehr.
Menderch,	Aidin, Kara-Hissar, n.
S. Co. Adana,	*Alaya.*
Cydnus,	*Tarsus.*
Sihoon,	ADANA.
Jyhoon,	MARASH.
G. of Iskenderun,	*Iskenderun, Beilan.*
Asy or *Orontes,*	Antaki (*Antioch*), Hamah, Homs.
Co. of Tripoli,	*Latakia, Jebail,* TRIPOLI.
Co. of Acre,	Beirout, *Saida* (*Sidon*). *Sur* (*Tyre*), AKRA (*Acre*), *Kisarieh* (*Cæsarea*).
Litany or *Leontes,*	*Tyre,* n., *Baalbec.*
Co. of Gaza,	*Jafa* (*Joppa*), GUZZEH (*Gaza*), *El Arish.*
Jordan (Dead Sea),	*Eriha* (*Jericho*), *Tabaria* (*Tiberias*), *Paneas* (*Cæsarea Philippi*), n., *Hesbeiya.*
Kedron,	El Khuds (*Jerusalem*).
Burada or Pharpar,	El Sham (*Damascus*), *Suk* (*Abila*).
G. of Suez,	*Suez,* Tor.
G. of Akaba,	*Akaba* (*Erion-Geber*).
E. Co. of Red Sea,	*Yembo,* Jiddah, Mecca, n., Mocha, Taas, n.
G. of Aden,	Aden.
Co. of Hadramaut,	MAKALLA, *Shahr.*
G. of Oman,	MUSCAT, Muttra, Sohar.
Aftan,	LACHSA, Deraieh, n.
W. Co. of Persian Gulf,	*El Katif,* Grane.
Euphrates,	Bassorah, Shuk-el-Shuyuk, Hillah (*Babylon*), *Hit, Anah, Kerkisiyeh, Rakkah.*
Kuran, *l.*	SHUSTER.
Disful, *l.*	Disful.

Rivers.	*Cities and Towns.*
Kerkhah, *l.*...	*Shus*, Kermandshah, Sinna.
Koon, *l.*...	KORUMABAD, Hamadan, n.
Tigris,.....	BAGRDAD, MOSUL, *Ruins of Nineveh*, DIYARBEKR.
Diyaleh, *l.*...	*Suleimaniyeh*.
Great Zab, *l*	Senn, *Arbel* (*Arbela*), n.
Khabour, *l.*...	*Kerkisiyeh*.

Rivers.	*Cities and Towns.*
Belik, *l.*.....	*Rakkah*, *Harran*, Orfah.
Sajur, ...	Aintab, ALEPPO, n.
Kara Su, or W. Euphrates,	Arab-Gir, Erzingan, ERZROUM, n.
Persian Gulf,....	Bushire, Nackiloo.
G. of Oman, ...	Gombroon.
Co. Biluchistan,	Choubar.
Dasti, ...	Kedje, Punjgur.
Puralli, ...	Sonmeanee, Bela.

INDIA, OR HINDUSTAN.*

Of the three great peninsulas in which Asia terminates on the south, India forms the central and by far the most important.

Boundaries.—N., Tib'et, from which it is separated by the Himalay'a Mountains; W., Afghanistan', Biluchistan', and the Arabian Sea; S., the Indian Ocean; E., Bay of Bengal' and Birma. Lat. 8°—36° N.; lon. 66¾°—99½ E.

In form it is a triangle, whose base is the Himalayas, the loftiest mountains on the globe, and whose apex stretches far out into the Indian Ocean. Its southern half lies within the torrid zone: Calcutta, on the central parallel, and only one degree south of the Tropic of Cancer, is nearly in the same latitude as C. Blanco, Mecca, Muscat', Baro'da, Canton', Mazatlan', and Havan'a. The country consists of three great natural divisions—viz., the basin of the Gan'ges in the north-east; the basin of the In'dus in the north-west; and the Dak'han, or strictly peninsular part, forming an elevated plateau in the south.

Area, Population, and Political Divisions.—Including Ceylon' and the British possessions in Bir'ma, the area is estimated at 1,475,198 sq. m., and the population at 241,236,235; or twelve times the area of the British Isles, with seven times their population. The valley of the Ganges is the most densely peopled portion (Oudh 474, Bengal 264), but over the whole of India there are only 165 persons to the sq. m.

About four-sevenths of this immense area, together with three-fourths of the population, are directly subject to the British Crown; while there are about 153 small native states additional, more or less under British protection. Besides these, there are two native independent states—viz., Nepal' and Bhotan'. The foreign possessions are now of very limited extent: those of the French are almost annihilated; the Portuguese still linger in a few spots, the scenes of their former grandeur; while the Danish possessions have become extinct.

* The orthography of many of the proper names contained in the following article is now altered, in accordance with the system uniformly adopted in India, but in most cases the former spelling will be found in the "Descriptive Notes."

BRITISH POSSESSIONS.—British India now consists of the following eight subdivisions—viz., 1, the Presidency of Bengal', embracing Bengal, Oris'a, Behar', Assam', and Chittagong', and occupying the lower basins of the Gan'ges and Brahmapû'tra; 2, the North-West Provinces and Oudh, including Benâ'res, Allahabad', Ag'ra, Oudh, and Rohilkhand', all in the upper basin of the Ganges; 3, the Panjâb', with Sirhind' and Del'hi, chiefly in the upper basin of the In'dus; 4, Central Provinces and Berar', in the north of the Dak'han; 5, Bombay' Presidency or Sindh, British Gujarat', and the Kon'kan, in the west of the Dakhan and in the lower basin of the Indus; 6, the Presidency of Madras', consisting of the Sarkars', Karnat'ak, Balaghat', and Koimbatûr', in the south of the Dakhan: 7, the Island Ceylōn', south of the Dakhan; 8, British Bir'ma, or the South-Eastern Provinces, on the eastern side of the Bay of Bengal'. The principal towns in these are as follows:—

Bengal' Presidency.—CALCUT'TA 892, Kal'na 60, Plassey, Murshidabad', 147 (Hug'hli), Patna 159 (Ganges), Bardhwan' 54 (Damûda), Pur'neah 50 (Co'sa), Behar' 30 n., Gay'a 43 n. (Fulgo), Dac'ca 66 n. (Brahmapûtra), Chittagong' 12 (Bay of Bengal), Katak' 40, Pû'ri 30, Sambhalpûr' 30 (Mahanâ'di).

N.W. Provinces and Oudh.—Benâ'res 173, Mirzapûr' 80, ALLAHABAD' 105, Kanhpûr' 60, Farrukhabad' 132, Haridwar' 100 (Ganges), Faizabad' 100 (Ghag'ra), Gorakhpûr' 54 (Rap'ti), Lukhnow' 285 (Gum'ti), Ag'ra 143, Mat'ra 65 (Jam'na), Ban'da 33 (Cane), Mirat' 29 (Kâ'li Nâ'di), Shahjahanpûr' 63, Pilibhit' 27 (Gur'ra), Bareilly 110, Rampûr' 100, Almo'ra 10 n. (Ramgun'ga).

Panjab', Sirhind', and Del'hi.—Ludhiâ'na 47, Ambâ'la 22 (Sat'lej), Multan' 80 (Chenâb'), LAHUR' 120, Amritsâr' 115 (Râvi'), Jalandar' 40 (Bi'as), Peshâw'ar 56 (Kabûl'), Del'hi 154 (Jam'na).

Central Provinces.—Sagar' 50 n. (Cane), NAGPUR' 112 (Nag), Gur'rah 25, Jabalpûr' 30 (Nerbud'da).

Bombay' Presidency.—Haidarabad' 24 n., Karâ'chi 22 n., That'ths 20, Shikarpûr' 30 n. (In'dus), BOMBAY' 644 (I. Bombay), Ahmadabad' 130 (Sabarmâ'ti), Surat' 95 (Tap'ti), Pû'na 80 (Mutamû'la), Nas'ik 25 (Godav'ari).

Madras' Presidency.—Mangalûr' 12, Kal'ikut 25, Cochin' 30 (W. coast), Tallangambâ'di 25, Tanjûr' 40, Trichinapal'li 30 (Kâ'veri), Arkat' 40, Velûr' 52 (Pâ'lar), MADRAS' 398 (E. coast), Nizampat'nam 25 n., Machhlipat'nam 28 (Krish'na), Karnûl' 20 (Tungabhad'ro), Bal'lari 30 (Hin'deri), Rajamahen'dri 20 (Godav'ari), Viahakpat'nam, Shikako'lam 50 (E. coast).

Ceylon'.—COLOM'BO 70 (W. coast), Galle 3 (S. coast), Trin'comali' 30 (E. coast), Kandy (centre).

British Birma and Straits Settlements.—Arakhan' 8 (Koladain'), Rangûn' 100, Prome 22 (Irawâ'di), Pegû' 6 (Pegu), Mulmein' 40 (G. of Martaban'), George'town 40, Malac'ca 12, Singapûr' 26 (Str. of Malacca).

PROTECTED STATES. — The principal native states under British protection, and in the order of the Presidencies in which they occur, are the following :—

Khas'ia States.—Chir'ra Pun'ji (Sur'ma).

Manipur.—Manipûr' (Kong'bo, *affl.* Brahmapû'tra).

Kush-Behar.—Behar' (Nilko'mar).

Sikhim'.—Sikhim (Atri, *affl.* Ganges).

Sikh States.—Patiâ'la 20 (Kosil'la), Jhind 20 (Chitang'), Sirhind' 20 (Sat'lej).

Kashmir'.—Srinagar' 40 (Jhelam'), Gil'git, Iskar'do, Leh 4 (Indus).

Bhawalpur.—Bhawalpûr' 20 (Sat'lej).

Rajput' States.—Jodhpûr' 80 n., Pâ'li 50 (Lu'ni), Jeysalmir' 35, Nagur' 40, Bikanir' 60 (Indian Desert), Bhurtpûr' 100 n. (Jam'na), Bun'di, Ko'ta (Cham'bal), Jaypûr' 400 n. (Bû'nas).

Gwalior.—Gwâ'lior 50 n. (Sindh, *affl.* Jam'na), Ujjain' 130 (Sip'ra).

Kachh.—Bhûj 20 n. (G. of Kachh).

Gujarat'.—Baro'da 100 (Mâhi'), Puttun' 30 (Surraswut'ti).

Mal'wa, Bhopal', and Indur'.—Indûr 15, De'was 25 (Sip'ra), Dhar 30 (Cham'bal), Bhopal' (Bet'wa).

Kolhapur.—Kolhapûr' n. (Krish'na), Sawant' Wâ'di 10 n. (Kon'kan coast).

Travancore'.—Trivan'deram 12, Ko'lam 20 (Malabar' coast).

Maisur.*—Maisûr' 65, Seringapatam' 12 (Kâ'veri), Bengalûr' 142 n. (Pennar'), Umrawatti, Ellichpar 28 (Purna).

Haidarabad.—Haidarabad' 200, Sikandarabad' 30 (Mû'si), Bî'dar 50 (Manja'ra), Aurangabad' 60 (Dudh'na), Assay'e (Pur'na).

Bandalkhand'.—Jhan'si 50, Dati'ya 40 (Bet'wa).

INDEPENDENT STATES.—These are now only two in number, bordering the Himalaya.

Bhotan'.—Tasisû'don (Godâ'da, *affl.* Brahmapû'tra).

Nepal'.—Khatman'du 50, Patan' 24 (Bishnmâ'ti).

FOREIGN POSSESSIONS.—The non-British European possessions are now reduced to the two following :—

French.—Pon'dicheri, Karikal' 10 (Coroman'del coast), Chandranagar' 30 (Hûgh'li).

Portuguese.—Pan'jim 20, Go'a 5 (Kon'kan shore).

Descriptive Notes.—The entire peninsula, together with Ceylon and British Birma, contains two cities (Calcutta, Bombay) of more than 500,000 inhabitants; four between 500,000 and 200,000 (Madras, Jaypûr, Lukhnow, Haidarabad); eighteen between 200,000 and 100,000 (Benares, Delhi, Patna, Agra, Lahûr, Murshidabad, Farrukhabad, Ahmedabad, Bengalûr, Ujjain, Allahabad, Haridwar, Baroda,

* Maisûr, Coorg, and Berar' are now wholly British.

Rampûr, Amritsar, Rangûn, Bhurtpûr, Bareilly); and about thirty between 100,000 and 50,000.

BENGAL.—**Calcutta**, on the left bank of the Hughli, an arm of the Ganges, 100 miles from the sea, is the cap. of British India—Delhi being the Mohammedan and Benares the Hindu capital; it is a large and magnificent city, containing numerous splendid buildings, and a million inhabitants. In the European part of the city the streets are wide and the houses separated by gardens, but in the native portion the houses are mean, and the streets narrow and dirty: it is defended by Fort-William, the largest fortress in India, containing 619 guns, and 80,000 stand of arms. As a commercial emporium, Calcutta is unrivalled in Asia—its annual imports amounting to two millions sterling, and its exports to more than five millions. Previous to 1698, when the East India Company removed hither their factory from Hughli, Calcutta was an inconsiderable village, surrounded by jungle; in 1756 the factory was attacked by the natives, and 146 Europeans were shut up in the famous "black hole," of whom 123 were suffocated before morning. **Kalna**, a place of considerable trade, and a station for steamers plying between Calcutta and the North-West Provinces. **Plassey**, 83 miles N. of Calcutta, is memorable for the decisive battle fought between Clive and Suraj-u-Dowlah, 23d June 1757, which established British supremacy in India. It was precisely a century after this engagement that the Bengal native army mutinied, in the hope of casting off the British yoke, the idea having become general among the natives that the raj of the Feringhees was destined to last for only 100 years. **Murshidabad**, a large, populous, but extremely unhealthy city, was the cap. of Bengal till superseded by Calcutta. **Patna**, an immense assemblage of mud-huts, maintains a large trade in opium, rice, wheat, indigo, saltpetre, and sugar: it was the scene of a frightful massacre in 1763, when Meer Cossim, the Nabob of Patna, murdered in cold blood 200 Englishmen. **Bardhwan** has coal and iron mines in its vicinity. **Purneah** is largely engaged in the cultivation of indigo. **Behar** produces vast quantities of opium, sugar, and cotton. **Gaya**, one of the sacred places of the Hindus, is visited annually by upwards of 100,000 pilgims. **Dacca**, once a place of great importance, is now rapidly falling into ruins, and its manufacture of muslin, once so celebrated, is now scarcely deserving of notice. **Chittagong**, formerly a place of considerable trade, and noted for its shipbuilding, has of late years greatly declined; it was ceded to the British by the Nabob of Bengal in 1760. **Puri** or **Jagannath** (Juggernaut) is distinguished over India as one of the principal strongholds of the Hindu superstition. The famous temple, completed in A.D. 1198, is said to have cost half a million sterling. Here Krishna, one of whose titles is Jagannath ("Lord of the Universe"), is the principal object of worship. **Sambhalpur** (Sumbulpore) is celebrated for its diamonds, principally found in the Mahanadi.

N.W. PROVINCES AND OUDH.—**Benares**, a large populous city on the Ganges, and in the estimation of the Hindus the most sacred place in the world; it is a crowded seat of native industry, and contains many wealthy native bankers and dealers in diamonds, for which it has long been famous. **Mirzapur**, a great cotton mart, and a place of considerable trade. **Allahabad**, capital of a province of same name, at the confluence of the Ganges and Jamna, is one of the sacred cities of the Hindus, and is visited annually by about 200,000 pilgrims; it is the grand military depot of the North-West Provinces, and was the scene of barbarous perfidy during the late insurrection. **Kanhpur** (Cawnpore), one of the most important com-

mercial cities on the Ganges, will be long memorable as the scene of Nana Sahib's brutal atrocities, 26th June and 15th July 1857. **Farrukhabad**, one of the principal commercial cities of Northern India, contains some extensive banking establishments, and has in its vicinity the military cantonment of Futtehgurh: here Lord Lake defeated the troops of Holcar in 1805. **Haridwar**, a great commercial city on the Ganges, where it issues from the mountains: here is held the largest fair in India, attended annually by about 250,000 traders and pilgrims. **Faizabad**, the former capital of Oudh, is a populous town, but rapidly falling into decay. **Gorakhpur** (Goruckpoor), taken by the English in 1802, contains a civil establishment and a great military cantonment. **Lukhnow**, cap. of the late kingdom of Oudh, is a large and populous city, containing some noble buildings: when attacked by the rebels in 1857, the British garrison, commanded by Sir H. Lawrence, shut themselves up in the residency, which they defended with unparalleled heroism for 87 days against 60,000 of the enemy, when at length they were relieved by Sir Colin Campbell. **Agra**, cap. of a province of same name, and formerly of the Mogul Empire, is the seat of government for the North-West Provinces; it was taken by the British in the Mahratta war in 1803; it contains the celebrated Tajmahal, or mausoleum of Shah Jehan, the finest existing specimen of Mohammedan architecture: it is built of white marble, inlaid with precious stones, and it is said that 20,000 men were engaged on it for twenty-two years. The city was seized by the mutinous sepoys in May 1857, and remained in their possession till the October following, when they were totally defeated by Colonel Greathed. **Mattra**, a sacred city, being regarded by the Hindus as the birthplace of their god Krishna. **Mirat** or **Meerut**, the headquarters of the Bengal artillery, is memorable as the scene of the outbreak of the terrible Indian rebellion, May 10, 1857, when the native troops shot their officers and massacred all the Europeans that could be found. **Pilibhit**, celebrated for its rice, is the mart of a considerable traffic. **Bareilly**, cap. of Rohilkhand, a considerable place, with a brisk and lucrative commerce, is the seat of one of the six circuit courts of the Presidency, of an English college, and of Persian and Hindu schools. **Rampur**, a large town, built of mud, and densely peopled. **Almora**, cap. of Kumaon; near it was fought the battle of Sittolee, which decided the fate of the war between the British and the Ghurkas.

PANJAB, SIRHIND, AND DELHI.—**Ludhiana**, the most flourishing commercial city in the Cis-Satlej territory. **Ambala**, the principal town in British Sirhind, is an important military station. **Multan**, the third city in the Panjab for population and commercial prosperity, was taken by the British in 1849, after a gallant and obstinate defence on the part of the enemy. **Lahur**, cap. of the Panjab, is a large and splendid city, containing numerous mosques and Hindu temples: it was one of the residences of the Mogul emperors, and is surrounded for many miles by extensive Mohammedan ruins, the relics of its former greatness; it came into the hands of the British in 1849, after the final defeat of the Sikhs. **Amritsar**, the sacred cap. of the Panjab, and the chief seat of the Sikh religion, is the most wealthy and commercial city in Northern India; it has manufactures of cotton, silks, fine shawls, and an extensive transit trade with Central Asia. **Peshawar**, near the Khyber Pass, is the frontier town of Hindustan, toward Afghanistan: since its occupation by the British, its trade has rapidly increased. **Delhi**, capital of a province of same name, and long the metropolis of the Mohammedan Empire in India, stands on the right bank of the Jamna, and is defended by a fort and a strong granite wall: the approach from the S.E. is very striking, from

the innumerable ruined monuments of its former prosperity and grandeur: the present city was erected by Shah Jehan in 1631; but the original Delhi, which extended along the banks of the Jamna for above 30 miles, was of very high, though unknown, antiquity. The Mirat mutineers arrived here on the 11th May 1857, and were immediately joined by the three native regiments stationed in the fort; having seized the arsenal, ammunition, and treasury, they cruelly massacred nearly all the European community, and proclaimed Mirza Jewan Bakht, the heir-apparent of the titular emperor of Delhi, and the lineal successor of the Great Mogul, as the sovereign of India; the city remained in the possession of the rebels till the 20th September following, when the British troops, under General Wilson, after a furious assault, regained possession of it, captured the king, and slaughtered great numbers of the insurgents.

CENTRAL PROVINCES.—**Sagar** (Saugor), an important town near the Cane, with a fort and a military cantonment. **Nagpur** ("City of Serpents"), the principal town in the Central Provinces, has extensive trade and numerous banking establishments. **Jabalpur** has a military cantonment and a school of industry.

BOMBAY.—**Haidarabad**, capital of Sindh, and 4 miles E. of the Indus, is a fortified city, containing a bazaar and a manufactory of arms; 6 miles N. of it is the village Meeanee, the scene of a memorable victory obtained by the Anglo-Indian army, under Sir C. Napier, over the Biluchees, in 1843. **Karachi** or **Kurrachee**, the principal seaport of Sindh, has considerable trade. **Thattha**, the ancient cap. of Sindh, is now much decayed: about 80,000 persons died of the plague here in 1689. **Shikarpur**, the most populous and commercial city in Sindh, has a great transit trade through the Bolan Pass. **Bombay**, cap. of Presidency of same name, and one of the most populous cities in India, is situated on a small island, which is connected with the mainland by an artificial causeway: the harbour is land-locked, perfectly secure at all seasons, and embraces an area of 50 sq. m.; its facilities for commerce and shipbuilding give it a superiority over every other city in India, while its trade is second only to that of Calcutta, its exports alone being valued at 5½ millions sterling. **Ahmadabad**, a large, handsome city, was captured by the British in 1780, and is now the headquarters of the Bombay army. **Surat**—here was founded the first mercantile establishment of the East India Company in 1612; its trade is now greatly declined. **Puna**, formerly the cap. of the Mahratta Empire, is the principal military cantonment of the Dakhan. **Nasik**, the centre of Hinduism in the Dakhan, has extensive Buddhist cave-temples in its vicinity.

MADRAS PRESIDENCY.—**Mangalur**, noted for the treaty of peace concluded here in 1784, between the East India Company and Tippu Sahib. **Kalikut**, the first place in India touched at by Vasco de Gama. **Cochin**, one of the principal seaports on the west coast, is noted for shipbuilding. **Tanjur**, celebrated for its great pagoda, considered the finest of the pyramidal temples of India. **Trichinapalli**, noted for its hardware, cutlery, jewellery, and cheroots. **Arkat** (Arcot), the scene of a memorable engagement between Clive and Rajah Sahib in 1751. **Velur** (Vellore), one of the healthiest military stations in India, is noted for the massacre of the Europeans in the mutiny of 1806. **Madras**, capital of the Presidency, and one of the most populous cities in India: it possesses no harbour, in consequence of which its commerce has greatly suffered; but a pier has lately been erected under great engineering difficulties. It is well built and handsome, and contains a university, cathedral, and several literary establishments. **Machhlepatnam** (Masulipatam), a fortified city,

eing noted for its chintz manufactures. **Shikakolam** (Chicacole), noted or its muslin manufactures.

CEYLON.—**Colombo**, the cap. and principal seaport of the island, is trongly fortified; it was taken from the Dutch in 1706, and is now the ntrepôt for most of the foreign trade. **Galle**, or **Point de Galle**, an nportant station for steam packets, has an excellent harbour. **Trin-omali**, a fortified town, on one of the finest harbours in the world. **Candy**, the former capital of Ceylon.

BRITISH BIRMA, &c.—**Arakhan** is extremely unhealthy, and has been he grave of many a British soldier. **Rangun**, the principal seaport of Pegu. **Prome**, the most populous city in Pegu, was taken by the British n 1852. **Mulmein**, the principal town and seaport in the Tenasserim rovinces. **Georgetown**, on Pulo Penang island, is admirably situated as mercantile station. **Singapur** has rapidly risen to importance as a reat commercial entrepôt for the goods of Europe and Asia.

PROTECTED STATES.—**Chirra Punji**, 4200 ft. above the sea, is said to be he rainiest place in the world, there being no less than 615 inches of rain alling from May to October. **Behar** produces the best opium in India. **Sikhim**, capital of a small native state of same name on the southern lank of Kinchinjunga, one of the loftiest of the Himalaya. **Patiala**, **Jhind**, and **Sirhind**, are the respective caps. of small native states of same names in the Cis-Satlej territory. **Srinagar**, or **Kashmir**, capital of Gholab Singh's dominions, has been long noted for its gorgeous shawls manufactured from the fine hair of the Kashmir goat. **Gilgit**, **Iskardo**, and **Leh** are the caps. of three small principalities subject to the Maharajah of Kashmir. They are situated in the upper valley of the Indus, at the S.W. foot of the Karakorum Mountains, some of which are 28,000 ft. high, and covered with glaciers. The people are Tartars, and profess the Mohammedan religion. Iskardo is the cap. of Balti, Bultistan, or Little Tibet. **Leh** is the chief town of Ladakh or Middle Tibet: here the heat of summer is perhaps unparalleled, the thermometer in September, and at an elevation of 15,500 ft., reaching 158° Fah., while from December to February it ranges from 10° to 20°. **Bhawulpur** has flourishing manufactures of silk. **Jodhpur**, cap. of Marwar, the largest state in Rajputana, is noted for its immense citadel. **Pali**, a great entrepôt for Malwa opium, on its way to Bombay. **Bhurtpur** carries on an extensive trade in salt, derived from a lake in its vicinity. **Jaypur**, the largest and most elegant city in all India that has been erected solely by the natives. **Gwalior**, cap. of the possessions of Sindhia's family, is a large town, with a strong citadel situated on a precipitous rock. **Ujjain**, formerly cap. of Gwalior, is one of the seven sacred cities of the Hindus, and the first meridian of their geographers. **Bhuj** is renowned for its manufactures in gold and silver. **Baroda**, cap. of the Guicowar's dominions, is a large and populous city, extensively engaged in trade. **Indur**, capital of Holcar's dominions, contains numerous Brahminical temples and a British residency. **Kolhapur**, the scene of a rebellion in 1844, which was put down by a British force. **Trivanderam** has a fine palace and an extensive garrison. **Maisur**, capital of a native state of same name, is a large, well-built town, with a fort and British residency. **Seringapatam** was the cap. of Maisur, under Tippu Sahib, who was slain here by the British in the famous siege of 1799. **Bengalur**, a large fortified town, containing the palace of Tippu Sahib. **Haidarabad**, a large, beautiful, and populous city, capital of the Nizam's dominions; near it **Golconda**, formerly famous for diamonds and other jewels. **Bidar**, noted for its manufacture of Bidari-ware, an alloy of tin and copper, used

for the bowls of tobacco-pipes. **Aurungabad**, once the favourite residence of Aurungzebe, the last Mogul emperor: near it **Ellora**, noted for its remarkable cave-temples, which, in magnitude and execution, surpass all other structures of the kind in India.

INDEPENDENT STATES.—**Tasisudon**, cap. of Bhotan, is the residence of the Deb Rajah, who has here a fortified palace. **Khatmandu**, cap. of Nepal, contains many Buddhist temples.

FOREIGN POSSESSIONS.—**Pondicheri**, cap. of the French possessions in India, is a very handsome maritime town. **Chandranagar**, once an elegant and opulent city, is now falling into decay. **Panjim**, cap. of the Portuguese possessions in India, is a handsome, well-built town. **Goa**, the former capital, once opulent and powerful, is now falling into decay.

Capes and Peninsulas.—Peninsula of Kathiá'wad, bet. the Kachh and Cambay'; Kachh, S. of Sindh; Diu Head, S. of Kathiawad; C. Comorin', the southernmost point of Hindustan; Dundra Head, S. of Ceylon; C. Negrais', S. of Pegu.

Islands.—Ceylon, S.E. of the Karnatak; Manar and Rameshwaram, between Ceylon and the mainland; Bombay, Elephanta, and Salsette, on the Konkan coast; Laccadives, 150 m. W. of the Malabar coast; Maldives, 200 m. S.W. of Cape Comorin; Hattia, in the delta of the Ganges; Ramri and Cheduba, W. of Arakan; Mergui Archipelago, W. of Tenasserim; Prince of Wales Island or Pulo Penang, in the Str. of Malacca; Singapur, S. of the Malay Peninsula; Andaman and Nicobar Islands, 180 m. S.W. of Pegu.

Ceylon, about 60 m. from the continent, has been a dependency of Great Britain since 1815, previous to which, however, the English, after various encounters with the Dutch and French, had obtained possession of the stations on the coast. The area is estimated at 24,454 sq. m., and the population at 2,405,287. The island is pear-shaped, well watered, and highly fertile: it is mountainous in the south, where Pedrotallagalla, its highest summit, rises to the height of 8280 ft. Adam's Peak, near the centre, 7420 ft. high, is famous in Buddhist tradition; on its level summit is a large stone bearing an impression resembling that of a colossal human foot, believed by the natives to have been made by Buddha when he ascended to heaven. Ceylon contains a greater abundance of precious stones than any other country in the world; and iron, manganese, plumbago, nitre, and salt, are plentiful. The climate is very hot and moist, and the vegetation highly luxuriant. The indigenous flora of Ceylon approximates more closely to that of the Malay archipelago than to that of Southern India. The most valuable trees are the cinnamon-tree, the cocoa, and Palmyra palm, the tallipot, tamarind, and bread-fruit tree. The first named yields three valuable commercial products — cinnamon-bark, cassia-buds, and oil of cinnamon, an essence obtained by distillation. Rice, cotton, pepper, tobacco, coffee, sugar-cane, indigo, and various other vegetables are raised. The fauna resembles that of the Dakhan, but many of the larger animals of the latter are here unknown. The fauna includes upwards of 600 species of fishes, all of which have been captured at Colombo, being the largest collection of species known to exist in one spot. Little is known of the aboriginal inhabitants, but "stupendous monuments of a remote and almost entirely unknown antiquity, ruins of cities, pagodas, and prodigious stone embankments for irrigation, proclaim their superiority over

ıe present natives." The latter, however, are ingenious workers in ıetals, and in manufactures of cordage, matting, and baskets. The earl-fishery on the N.W. coast, formerly the most valuable in the world, fter being abandoned has been resumed. The inhabitants profess the ıuddhist religion, while the languages spoken are the Tamul and Cinalese. *Manar* and *Rameshwaram* form a part of Adam's Bridge — a idge of sandbanks which almost completely obstructs the channel etween Ceylon and the continent. In the Hindu mythology it figures s the route by which the demi-god Ram invaded Ceylon. *Elephanta*, small island, six miles S.E. of Bombay, contains a celebrated cave-emple, in the face of a hill, sculptured with representations of the ersonages of the Hindu mythology. The *Laccadives* consist of 17 small slands of coral formation, belonging to Britain. The *Maldives*, also of oral formation, are fertile and well watered, and are governed by a Sultan, who is tributary to the British. Nearly all the other islands numerated above belong to Great Britain. The *Andaman* and *Nicobar* roups came into our possession very recently. The former are densely rooded and thinly peopled—the inhabitants being in the lowest stage of ivilisation—and are considered well adapted for a convict settlement. The Nicobars belonged to the Danes till 1848, when they finally abanloned them; and the native chiefs have spontaneously hoisted the British flag.

Gulfs and Straits.—G. of Kachh, bet. Kachh and Gujarat; Rân of Kachh, N.E. of Kachh; G. of Cambay, E. of the Peninsula of Kathiawad; G. of Manar and Palk Strait, between the Karnatak and Ceylon; G. of Martaban, S. of Pegu.

Mountain Systems.—Northern India contains the Himalaya, the loftiest elevations on the earth's surface (see under "Asia," par. 9). The mountains of Southern India, or of the Dakhan, consist of the following ranges:—

1. The *Aravulli Mountains*, in Rajputana, form the western wall of the plateau of Malwa, and separate the basins of the Ganges and lower Indus; Mount Abu, the highest summit, attains an elevation of 5000 ft. 2. The *Vindhya Hills*, in Gwalior, Indûr, and Bhopal, 2600 ft, form the S. wall of the plateau, and separate the Jamna from the Nerbudda. 3. The *Sautpura Hills*, 2500 ft., between Indûr and Khandesh, separate the basins of the Nerbudda and Tapti, and are continued to the east by the *Mahadeo Hills*, 4200 ft. 4. The *Western Ghâts*, extending for about 1000 m. along the Konkan and Malabar coasts, from the valley of the Tapti to Cape Comorin, form the water-parting between the Arabian Sea and the Bay of Bengal—thus constituting the W. wall of the table-land of the Dakhan: their average height is about 4000 ft.; but Benasson, the highest summit, is 7000 ft. They present an abrupt face to the west and a gentle slope to the east. Vast quantities of moisture are deposited on them (see "Climate"), and in them originate all the larger rivers of Southern India. 5. The *Nilgiris*, S. of Maisûr, connect the Western with the Eastern Ghâts, and form the S. wall of the plateau of Maisûr; highest summit, Dodabetta, 8760 ft. At their S.W. extremity is the great Palghat Pass, which affords easy communication between the Karnatak and Malabar coast. 6. The *Eastern Ghâts*, on the Koromandel coast, extend from the Nilgiris in a N.E. direction to Balasore, and form the E. margin of the plateau of the Dakhan; highest summit about 3500 ft.; average elevation 1500 ft.

Table of Rivers and Towns.—See under "Further India."

Lakes.—These are very few, considering the great extent of the country, and are chiefly confined to the basin of the Indus; as *Manchur*, in Sindh; *Wulur*, in Kashmir; *Rawan* and *Mansarowar*, at the sources of the Satlej; *Pulicat*, on the coast of the Karnatak; and *Chilka*, on the Orisa coast. *Sambuhr*, in Rajputana, yields great quantities of salt. The most remarkable inlets of the sea are the *Rán of Kachh*, 6000 sq. m., which, in the dry season, is a barren, sandy desert, interspersed with small salt lakes.

Climate.—The elevated regions of Northern India enjoy a temperate climate, varying with the altitude. Thus, at an elevation of 7000 ft., it resembles fine summer weather in England, while higher up the Himalayas, the limit of perennial snow is reached at the height of 16,200 ft.; but, in the valleys of the Ganges, Indus, and other low-lying regions farther south, the heat is extreme, and almost intolerable to Europeans. Here the year is divided into three seasons—the hot, the rainy, and the temperate.

The *hot season* commences in March and continues till the beginning of June. The sun is then scorching, the ground brown and parched, dust flies in whirlwinds, the brooks become dry, small rivers scarcely keep up a stream, and the largest are reduced to comparatively narrow channels in the midst of vast sandy beds. The great *rainy season* succeeds the hot, and lasts, with occasional intermissions, till October. The vapours borne by the S.W. monsoon are condensed on the Western Ghâts, and the rain falls in torrents along the west coast. At Bombay 16 inches of rain have been known to fall in a single day: and at Mahabuleshwar, a sanatarium on the Western Ghâts, near Sattara, the fall is 254 inches in the year, of which 242 fall during the four monsoon months. A smaller monsoon from the N.E. succeeds that from the S.W., and is the cause of the principal rains that fall on the E. coast of the peninsula. Sindh, with the rest of the lower basin of the Indus, is nearly destitute of rain. The valley of the Ganges resembles Great Britain in respect to the quantity of moisture deposited—thus, at Calcutta, 64 inches fall annually; at Benares, 41; Allahabad, 27; Delhi, 20; Mirat, 32. Along the Brahmaputra the fall of rain is prodigious; in some places, as at Silhet, it amounts to 209 inches, and at Chirra Punji, among the Khasia hills, the annual fall is ascertained to be 615 inches! at Najpur, in the Dakhan, the fall is 40 inches; at Sattara, 40; Punah, 24; Cape Comorin, 28; Madras, 55; Bombay, 75; Katak, 50; Arakan, 200. The *temperate season* extends from October to the end of February. Though the heat is still very great, slight frosts sometimes occur for an hour or two about sunrise. The mean temperature of the year ranges from 75° to 90° Fah. On the plateau of the Dakhan, it is 75°; Bombay, 81°; Madras, 83°; and at Calcutta, 90°. The summer heat at Leh is said to amount to 158°.

The Geology of India was long imagined to be very uninteresting, but recent investigations have proved it to possess considerable variety. Granite and metamorphic rocks abound in the Dakhan and other parts of Southern India, in Orisa, Malwa, and the Himalaya range. Trap covers an immense area in Western India, between Goa and the G. of Cambay, and stretching from the Arabian Sea to Nagpûr, with outliers at Rajmahal, about the head of the Gangetic

delta, and at Rajamundri, near the apex of that of the Godaveri. Of sedimentary rocks, the Palæozoic are limited to the Himalayas and the Panjab; but Mesozoic strata, including an inferior kind of coal, occur in the W. of Bengal, Orisa, Behar, the Nerbudda territory, Nagpur, and Kachh; while others of lower Cretaceous age are found in the neighbourhood of Pondicheri and Trichinapalli. The oldest Tertiary strata appear to be a Lower Eocene deposit, for the most part fresh-water, connected with the trap above mentioned, which is thus known to have been erupted since the commencement of the Tertiary epoch. Middle Eocene beds, in continuation of the nummulitic limestone of Southern Europe, Egypt, and Arabia, are developed in Sindh on the W., and the Khasia on the E., between which there are found, in the Sewâlik or sub-Himalayan range, Upper Miocene strata, remarkable for the number and size of their animal remains. India, unlike more northerly countries, is destitute of drift; but its surface is in many places composed of a red irony clay, often hardened into stone, called Laterite; while not unfrequently its plains are covered with a rich black soil, named Regur, favourable to the cultivation of soil.

Minerals.—The mineral resources of India are of the most varied character. Iron and copper are found in all parts of the peninsula; coal in many places, as Bengal Proper, the valleys of the Godaveri, and Nerbudda, the Tenasserim provinces, Orisa, Silhit; gold and precious stones in the Panjab, Tenasserim, and the Malabar coast; diamonds in Bandalkhand, Sambalpûr, and Vizapûr: but the diamond-mines of the Pennair, which once supplied the merchants of Golconda, are no longer wrought. Salt is found in abundance in the Panjab and Rajputana, and saltpetre in several places.

Botany.—The whole of Hindustan south of the Himalaya, together with Ceylon, the Eastern Peninsula, and the south of China, constitute the seventh phyto-geographic region of Professor Schouw; while his eighth region comprises the mountains of India between the elevations of 5000 and 12,000 feet.

The first mentioned, which is also called the *Indian Region*, or *Region of Scitamineæ and Zingiberaceæ*, is unrivalled for the richness of its vegetation. Tropical plants are abundant, while the extra-tropical disappear; the trees are never destitute of flowers, and the number of arborescent plants is very numerous; the flowers are large and splendid, and there are many climbing and parasitical plants. The principal trees are the teak, which is reckoned superior to oak for shipbuilding; the saul, sisso, and babul; the cocoa-nut, every portion of which is rendered available to the wants of man; the mahua, important as an article of food; the bamboo, largely employed in scaffolding; the banyan, tamarind, mango, the Palmyra and other palms, sandal, and ebony. The cultivated plants in this region are wheat, rice, sago, millet, cocoa-nut, tamarind, mango, ginger, cinnamon, mangosteen, peppers, indigo, cotton, tea (on the Upper Ganges and in Assam), plantain, rose-apple, coffee, bananas, guava, orange, shaddock, sugar-cane, cloves, turmeric, water-melon, yams, ground-nut, soja, beans, and pulses. Mean annual temperature, 66°—83°. The number of flowering plants in Hindustan alone is reckoned at 6954, of

which 918 are monocotyledons, and 6036 dicotyledons. The *eighth*, or *Emodic Region*, embraces the Himalayas above the height of 5000 ft., and comprises Kashmir, Sirmur, Gurwhal, Kumaon, Nepal, Sikhim, and Bhotan: here the mean annual temperature ranges from 66° to 37° Fah. It is sometimes called the Region of Rhododendra, as these form a distinguishing characteristic of its vegetation. Pines abound, including the magnificent deodar, together with oaks and other forest-trees common in Europe, while tropical plants either wholly disappear or are very rare. The western portion of this region differs from the eastern in having a damper climate, a predominance of dicotyledonous forests, and a rarity of coniferous trees. The cultivated plants are the cereals and the orchard-fruits of Europe, mountain rice, and, in the lower regions, a few tropical plants. Wheat is raised on the sides of the mountains to an elevation of 10,000 ft. On the banks of the Lower Ganges, and all around the sea-coast, rice constitutes the staple food of the inhabitants; wheat and maize are largely consumed in the North-Western Provinces; while the peasantry of the Dakhan depend for subsistence on jowar, bajra, and a small poor grain called "raggi." One of the principal cultivated plants of India is opium, which is chiefly grown in Bengal, parts of Bombay, and Malwa. Its production and sale form a Government monopoly. The total value of the opium exported from British India in 1867 was upwards of £11,000,000. Indigo is chiefly produced in Bengal, in the delta of the Ganges, whence about £2,000,000 worth is annually raised. Tea is now largely cultivated in Assam, and coffee of good quality on the Nilgiris: and the cultivation of the cinchona plant (Peruvian bark) is succeeding admirably on the high grounds.

Zoology.—The fauna of Hindustan is exhibited in detail under "Asia," par. 18, where the last column in the different tables shows the number of species in each order known to exist in this peninsula. The forests contain a variety of wild animals, the most remarkable of which are the elephant, rhinoceros, gayal, yak (the latter being found only on the Tibetan frontier), and bear. Tigers, panthers, leopards, wild-boars, hyænas, wolves, and jackals, pervade both forest and jungle. Lions are met with only in particular localities, especially in Rajputana and Gujarat. Other wild animals are the deer, antelope, and monkey. The Kashmir goat, noted for its very fine wool, the silk-worm, and the lac insect, which produces the sticlac of commerce, are largely reared. Crocodiles, serpents, and other reptiles, are very numerous, amounting in all to 179 species. There are 450 species of birds of every variety of plumage. Game and fish are abundant in all parts of India.

Ethnography.—About six-sevenths of the enormous population of India are Hindus (an Aryan or Japhetic race); the rest are of various races. Among these are reckoned 10,000,000 Arabs and Persians; 150,000 Europeans, chiefly British; several millions of Afghans, chiefly located in the North-West Provinces, and professing the Mohammedan religion. In addition to these there are numerous hill-tribes, who are now regarded as remnants of the aboriginal inhabitants of India. They are of black complexion, speak languages of the Turanian class, but have no literature, and almost no traditions. They are known by the general name of "Coolies," and comprise the Gonds or Khonds

of Orissa, the Bhils of Mewar, the Warlis and Katodars of the Western Ghâts, the Chenewars of the Eastern Ghâts, and the Yenedys of the Karnatak. They have scarcely any religion, have in general no idea of a future state, and belong to the lowest type of civilisation. (See under "Languages," No. 3, below.) The Hindus, though generally spoken of as one people, really consist of an immense number of families and races, differing widely from each other in appearance, language, and customs. In general they are of slender build, graceful, agile figure, with a complexion varying from a dark olive to a light transparent brown. The face is oval, the forehead moderately large, the eyes and hair black, the nose and mouth generally of a European cast.

Languages.—Upwards of thirty distinct languages are spoken in India. These are resolvable into three main divisions, the first of which is confined to the Aryan races, who are believed to have entered India about 3000 years ago (p. 86), the second and third to the Turanian.

1. THOSE DERIVED IMMEDIATELY FROM THE SANSCRIT, THE ANCIENT LANGUAGE OF THE BRAHMINS, IN WHICH THEIR SACRED BOOKS ARE WRITTEN.—These are spoken by the Hindus proper of Northern India, and comprise the *Bengalee*, *Assamese*, and *Uriya* or *Orisa*, in the Lower Provinces—the first of which is spoken by about 30,000,000; *Hindi* or *Hinduwee*, very closely allied to the Sanscrit, and the most general language of the Hindu race, in Oudh and the North-West Provinces; *Hindustani* or *Urdu*, a distinct language from the Hinduwee, though resembling it in idiom and construction. It can claim predominance in no particular locality, but is spoken by the Mussulmans in every part of India, and especially within the limits of the Hinduwee area, as in Delhi, Lukhnow, Allahabad, Patna, and Murshidabad. It is now adopted by the Indian Government as the general medium of communication with the natives, is the language of official documents and courts of justice, and by far the most useful to foreigners visiting India, whether in an official or commercial capacity. *Palpa*, *Kumaon*, and *Gurwhal*, W. of Nepal, and N. of the Hinduwee, to which they are closely allied. *Gujarattee*, *Kachhee*, *Sindhee*, and *Multan*, W. of the Hinduwee, which they greatly resemble. *Sikh* or *Panjabee*, is the language of the Sikhs in the Panjab, and derived from the now extinct *Pracrit*, formerly the vernacular language of this region. *Dogura* or *Jumbu*, in the hill country N. of the Panjab, and *Kashmerian* in the valley of Kashmir, are the most northerly of the Sanscritic languages in India. *Nepalese*, in Nepal, exhibits the phenomenon of a Hinduwee element engrafted on a language of monosyllabic structure. It has so much in common, however, with the Tibetan of Bhotan, Ladakh, and Bultistan, that some writers regard it as a corrupt Tibetan dialect. The *Mahrattee*, between the Arabian Sea and Nagpur, and between the Tapti and the Portuguese district of Goa, besides the great body of words derived from the Sanscrit, contains a few that may be connected with the non-Sanscritic languages of the Dakhan. In addition to the above may be mentioned the *Ujain*, *Marwar*, *Harrotee*, *Udeypura*, *Bikaneer*, and other dialects of Rajputana and Central India—all allied to the Hinduwee, and spoken by upwards of 12,000,000 of the population. 2. LANGUAGES OF THE DAKHAN.*—These, in common with the foregoing, were long considered as the immediate descendants of the Sanscrit; but after closer investigation they are now generally re-

* Now known as the Dravidian family of languages.

garded as the remnants of an Indo-Turanian tongue, which at a very remote period prevailed over the whole peninsula—slight traces of it being still discernible in the purest Sanscritic dialects of the north. The languages of the Dakhan, in words relating to common worldly affairs and in grammatical structure, are essentially different from the dialects of Northern India. It would therefore appear that there are in the Dakhan races who were driven to the south at an early period of antiquity by the Hindu invaders, from whom they received their religion, laws, and civilisation. The most northerly of these is the *Telinga* or *Telugu*, on the Coromandel coast, nearly the whole of Haidarabad, part of Berar, and the eastern part of Maisûr, extending northwards to the river Ganjam, and southwards to Pulicat. It is the softest and most polished of the languages of Southern India, and contains the greatest portion of Sanscrit words, which, however, form no part of its basis. *Canarese* or *Karnata*, S. of the Mahratta area, extending eastward till it meets the Telinga and Tamul dialects, and southwards to the Nilgiris. It greatly resembles the Telinga and Tamul, and is spoken by upwards of 7,000,000 of people. *Tulu* and *Malayalim*, on the Canara and Malabar coasts, between the Western Ghâts and the sea, and from Goa to Cape Comorin. These are closely allied to each other and to the Tamul, of which indeed they may be regarded as dialects. *Tamul*, the language of the ancient kingdom of Dravira, is spoken in the entire S.E. portion of the peninsula, from Pulicat to Cape Comorin, and from the Indian Ocean to the Western Ghâts. It also prevails in the north part of Ceylon, and altogether it is the language of 7,000,000 people. It is usually considered the type, or generic form, around which all the other languages of Southern India arrange themselves, as it possesses fewer affinities with the languages of Sanscritic origin than any other dialect of the Dakhan. The *Cingalese*, in Central and Southern Ceylon, considerably resembles the Tamul in construction and idiom; but *Pali*, a dead language closely allied to the Sanscrit, is the learned and religious language of the island. 3. THE LANGUAGES OF THE BARBAROUS TRIBES OF THE MOUNTAINS.—These remain, hitherto, rude and unwritten; but so far as they have been examined they more resemble the second than the first group. Several curious instances of affinity have been traced between some of them and the Turanian of Central Asia; and little doubt remains that the wild tribes speaking them belong to the true aborigines of the country, and are quite distinct from the Hindus of Northern India.

Religion.—The principal forms of religious belief prevailing in India and adjacent territories are Brahminism, Buddhism, Jainism, Mohammedanism, Nanukism, Parseeism, and Christianity.

1. *Brahminism* is the religion of nine-tenths of the whole population of India Proper, and thus numbers among its votaries at least 170,000,000 of people. The Brahmins entered India from the N.W. side of the Indus, about B.C. 1100, and speedily subdued the former inhabitants, whom they compelled to embrace the religion of the conquerors, which consists of a variety of the most degrading superstitions and idolatrous rites. Though their first sacred writings, called the Vedas, written in the ancient Sanscrit, inculcate the existence of one Supreme Being, yet, in subsequent books, named Puranas, many millions of subordinate deities are recognised, who administer the system of the universe. Brahma, Vishnu, and Shiva, are the three persons of the Hindu trinity, and the principal objects of worship. A doctrine somewhat resembling the Incarnation of the Saviour finds a place in the Hindu mythology—Vishnu, the second person of

their trinity, being supposed to have frequently appeared on earth, in various forms, for the purpose of destroying evil spirits, spreading the true religion, protecting its votaries, and other beneficent purposes. Another leading doctrine of the Brahmins is the *transmigration of souls*. After death, the soul, they believe, passes into other bodies, either of men or inferior animals, according to the purity or impurity of the previous life. After ages have passed in this process of purification, it is at length absorbed into the essence of the Supreme Being, and so loses its identity. Brahminism is further characterised by multiplied forms and ceremonies, fatiguing pilgrimages, rigorous fastings, acts of the most revolting uncleanness, and the wilful sacrifice of life. But the system of *caste* is the main pillar of this ancient but monstrous superstition. Originally there were but four castes—the *Brahmins*, or priests, theologians, and physicians; the *Kshatryas*, or military order; the *Vaisyas*, or agriculturists, merchants, and herdsmen; and the *Sudras*, or artisans, labourers, and servants. In the course of ages these four orders have become greatly intermingled, and, with the exception of the first and last, possess now little practical influence. The evils of caste, however, still remain unmitigated, as every trade and occupation has come to be regarded as a separate caste, the members of which refuse to eat, drink, or intermarry with those of any other caste. Certain classes of crime are punished by the loss of caste, and when once lost it is irrecoverable, and the criminal is suddenly plunged into hopeless misery. These outcasts, or persons of no caste, are termed Pariahs in the S., Mahaurs in the W., and Dhairs in the N., and are very numerous, constituting, it is said, one-fifth of the entire population. In the towns they are confined to separate quarters and employed in the most degrading occupations; they are denied the common rights of humanity, and a Brahmin is contaminated if he should come within their shadow. The origin of caste in India, as in Egypt and other ancient countries, is lost in the darkness of the pre-historic ages. Schlegel and others conjecture, with much probability, that the lower castes are the aboriginal inhabitants, reduced by their Brahminical conquerors to their present condition of degradation. 2. *Buddhism*, at one time the predominant religion of the country, is now professed only in Bhotan, Ceylon, and Arakhan. Buddha, its founder, regarded by the Brahmins as one of the incarnations of Vishnu, appeared as the reformer of Brahminism about 600 B.C. The province of Behar appears to have been his native place. So far as his influence extended, he abolished caste, reformed the creed, and changed many of the religious observances of Brahminism. A bloody and long-continued war arose between his followers and the Brahmins; but the latter ultimately prevailed, and expelled the Buddhists to Ceylon, Further India, and other countries, about the beginning of the sixth century of our era. (See under "China.") 3. *Jainism*, a mixture of Brahminism and Buddhism, has numerous votaries in Central and Western India. It did not assume importance till the eighth or ninth century of the Christian era. 4. *Mohammedanism* embraces about 25,000,000 of the population, principally Afghans and Arabs, who are most numerous in the Panjab, Kashmir, the North-West Provinces, and parts of the Dakhan. The Arabic language is here, as everywhere else, the depository of the Mohammedan faith. The Mohammedan invasion of India commenced in the eleventh and was completed in the fifteenth century, but most of the Mohammedans now in that country have descended from a Hindu stock. 5. *Nanukism* or *Sikhism*, the religion of the Sikhs, is a compound of Brahminism and Mohammedanism, and is professed by about half a million of people. Nanuk, its

founder, a native of the Panjab, was born in 1469. 6. *Parseeism or Fire-worship*, is the religion of the refugees from the religious persecutions of Persia. Though small in number, they are distinguished for their public munificence, skill, and their success in commerce. Zoroaster, the founder, or rather the reformer, of Parseeism, was born at Urumiah, in Azerbijan, B.C. 589, and was therefore a contemporary of Buddha. 7. *Christianity* was introduced into India in the third century, since which there have been Syrian Christians in the S.W. of the country. The Portuguese established missions on the W. coast in the sixteenth century. In the seventeenth the Reformed religion was introduced by the Dutch, but with little success. In 1793 the Baptist Missionary Society sent out its first agents to Bengal (Carey and Thomas), and, soon after, several other societies followed their example. In 1862 there were 31 missionary societies, having 371 stations, 519 foreign missionaries, 140 native missionaries, 1365 native catechists, 1190 churches, with a communion roll of 31,249. By the census of 1872, the Christian community numbered nearly 900,000, or one for every 200 of the population, and even of these about 250,000 were Europeans, while 9-10ths of the remainder were Roman Catholics. Slowly but surely the religion of Jesus is undermining the hoary idolatries of India. The harvest truly is great, but the labourers are few.

Science and Literature.—The whole circle of Hindu knowledge is divided into eighteen parts, of which the first four are the *Vedas*. These are regarded as an immediate revelation from heaven, and as containing the true knowledge of God, of His religion, and of His worship. Next to the Vedas rank four *Upavedas*, which comprise the knowledge of medicine, music, and other arts. After these follow six *Vedangas*, which relate to pronunciation, grammar, prosody, religious rites and ceremonies; and finally, four *Upangas*, which treat of logic, philosophy, jurisprudence, and history.

The VEDAS are undoubtedly the most ancient compositions in the whole range of Sanscrit literature. Sir W. Jones fixes their date at B.C. 1500; Colonel Vans Kennedy, at B.C. 1200; while the learned Ritter, who has investigated the subject with the greatest care, believes they were either collected or composed from B.C. 1400 to B.C. 1000. Their high antiquity, combined with the obsolete dialect in which they are written, is such as to render the reading of them difficult even to the Brahmins. A complete collection of the Vedas, obtained by Colonel Polier, from Jaypur, is now deposited in the British Museum, in eleven large folio volumes. A translation of these, by Professor H. H. Wilson, appeared in 1867. From the analyses that have been given of their contents, the very important fact appears that the science of these books is as false as their theology—a most auspicious fact, certainly, to the missionary enterprise in India. Inferior to the Vedas in antiquity, but regarded as equally sacred, are the famous INSTITUTES OF MENU, consisting of a complete system of criminal jurisprudence, divided into twelve books. Sir W. Jones assigned them to B.C. 880, but Ritter is of opinion that the different parts belong to different times. These laws—being regarded as sacred by upwards of a hundred millions of people, whose habits of life have been moulded by their influence for so many generations—must ever form an object of the deepest interest to the philosopher and historian; and it would be impossible to comprehend the literature or local usages of India without a knowledge of their contents. Previous to the compilation of

this legal code there were composed two grand epic poems—the *Mahábhárat*, or the wars of Krishna, in eighteen cantos; and the *Ramayana*, which narrates the banishment and wanderings of Rama, a prince belonging to the dynasty of the kings of Ayodhya. The next most important division of the Hindu sacred books consists of the PURANAS. These are divided into two classes, each containing eighteen books. They consist of poetical representations of Indian mythology and fabulous history, and hold an eminent rank in the religion and literature of the Hindus. They regulate their ritual, direct their faith, and supply, in popular legendary tales, materials for their credulity. Besides theology and poetry, the Sanscrit literature embraces philosophy, jurisprudence, mathematics, history, geography, medicine, fables, tales, and dramatic compositions. Its poetry has assumed almost all the forms to be met with in Europe, and in every form it is characterised by consummate beauty and excellence. The most celebrated of its heroic poets is Valmiki, who has been likened to Homer; in the drama, Cálidása has been designated as the Indian Shakespeare; while Vyása has been compared to Milton.

Education.—The great body of the people are sunk in the deepest ignorance. Even among the Brahmins superior education is very partially diffused, most of them being ignorant of their own sacred and professional language. Some of the higher classes exhibit an easy epistolary style, though most of them can only read and sign their names. The few who advance beyond reading and ciphering study only the native sacred books, and hence their views are very limited and erroneous. The female sex is everywhere kept in a state of savage ignorance, as also the *pariahs* or people of no caste. The British Government devotes laudable attention to the education of the natives, having, since 1854, established 25,147 schools, with an attendance of 800,000 pupils. Besides these there are universities at Calcutta, Madras, and Bombay, and colleges in eleven other large towns. Numerous schools have been founded by some of the missionary societies, and by private munificence. The English language is taught in all the Government schools, as well as most other branches of a sound popular education. The natives of all classes, at least in the presidency seats and a few of the larger cities, exhibit the greatest eagerness to avail themselves of a good English education for their children; and some of the colleges and schools have already produced accomplished scholars. Unfortunately, however, for the highest success of the Government seminaries, the Bible is systematically excluded, though ready access is accorded to the sacred books of the natives.

Government, Army and Navy, &c.—In the numerous native states, whether Independent or Protected, the government is invariably a pure despotism—the people being everywhere crushed to the earth by their rapacious and unprincipled sovereigns. The relation of these to the British Government is indicated above, under "Political Divisions." Since 1858, the government of British India is vested in a Governor-General and Council, who reside at Calcutta; and a Secretary of State for India, with a Council of fifteen members, in London. The administration was previously in the hands of a body of merchants, called the East India Company, but subject to the

supervision of the British Parliament, through the medium of the Board of Control, whose President was a Cabinet Minister. The East India Company was incorporated by Queen Elizabeth in 1600: it had a capital stock of £6,000,000, shared in different proportions among 3600 individuals. The Mogul emperor gave them permission to establish a factory at Surat in 1611; their first establishment at Madras was formed in 1648; and Fort-William, at Calcutta, was erected in 1699. From that time, partly by treaty and partly by conquest, their authority had extended over the greater part of the peninsula. But the expiry of their charter in 1858, the lamentable events of the recent formidable insurrection, and other causes, have induced the British Government to take the immediate superintendence of their vast possessions in India into their own hands. The total armed force in India, previous to the rebellion of 1857, amounted to 729,385—viz., in British India, 289,457 (of whom 86,608 were Europeans, and 202,849 native sepoys); Protected and Independent states, 398,918; contingent troops, commanded by British officers, 41,010. Almost the whole Bengal native army, numbering 97,511 men, joined in the mutiny of 1857. In 1870, the number of British soldiers serving in India was 62,693, while the native troops in the British army amounted to 114,750 men.

Commerce, Manufactures, &c.—The commerce of British India is extensive, and is chiefly carried on with Britain, China, Japan, France, and Australasia. The principal part of its Exports, which consists of opium, raw cotton, cinchona bark, spices, rice, indigo and other dyes, raw silk, tea, jute, salt, saltpetre, is conveyed to the United Kingdom. The total value of the exports for 1873 amounted to £56,525,000, of which £30,000,000 value came to the United Kingdom; China and Japan took about £12,000,000; France, £2,364,000; Singapur and Malaya, £2,000,000. China and Japan are its principal customers for opium; France and Great Britain for indigo, silk, and tea; while America precedes France in the articles of silk and saltpetre. The value of the imports into India for the same year amounted to £35,817,000, one-half of which came from the United Kingdom. These consisted chiefly of cotton goods and yarn, railway materials, machinery, coal, copper, iron, lead, spelter, and other metals, jewellery and other precious stones, woollen goods, silk goods, raw silk, spirits, wines, stationery, and salt. The opium grown in India is sent to China in exchange for tea and silk, which are then sent to England, and thus the British public is implicated in this scandalous traffic so ruinous to the teeming millions of that vast empire. The restrictions which formerly hindered the commerce of India and retarded the development of its resources, have been gradually removed, and the country now enjoys free trade. The manufactures mainly consist of articles for home consumption, as silks, muslins, and chintzes, together with gold and silver embroidery in Delhi and the Panjab; Kashmir shawls of the finest texture in Kashmir; and jewellery, toys, and ornaments at Benares and many other large towns. The Receipts for 1870 amounted to £52,942,480, the Expenditure to £53,568,076, and the Public Debt (for 1873) to £105,470,000.

Internal Communication.—The internal commerce of India has been vastly developed during the last few years by the construction of several great lines of *railway*, in the accomplishment of which the greatest engineering difficulties have been overcome. One line, the East Indian, traverses the basin of the Ganges from Calcutta to Delhi. 2. The Great Indian Peninsular, which, starting from Bombay, joins the East Indian line at Jabalpur, while another branch of it joins the Madras line at Raichur. 3. The Madras line, connecting Madras with Raichur, and Madras with Beypur on the Malabar coast. 4. The Sindh, Panjab, and Delhi lines: the first connecting the port of Karachi with Kotri at the head of the Indus delta; the second connecting Multan with Amritsar; and the third joining Amritsar and Delhi, and so connecting the basins of the Indus and Ganges. The total number of miles open in 1874 was 5872, and 1850 more were either projected or were in course of construction. Indian *canals* are on a vast scale, but are employed more for irrigation than for traffic. The chief of these are the Ganges Canal (one of the greatest of the kind in the world), 525 m. in length, extending from Haridwar on the Ganges, proceeds by Mirat to Allighur, with branches to Kanhpûr and Hamirpûr. Other great canals are the Jamna Canal, Doab Canal, Godavari Canal, Kristna Canal, and Kavari Canal. Telegraphic communication is rapidly on the increase. In 1873 there were 15,700 m. in operation, besides 1205 m. of submarine cable between Suez and Aden, and 1874 m. from Aden to Bombay.

FURTHER INDIA.

FURTHER INDIA, also called the South-Eastern Peninsula and the Indo-Chinese States, consists of an assemblage of states lying between India and China, and forming together the easternmost of the three great peninsulas of Asia.

Boundaries.—N., China Proper and Tibet; W., India and the Bay of Bengal; S. and E., the China Sea. Situated between lat. 1° 10′ and 27° N., and between lon. 91° 45′ and 109° 9′ E., it embraces 26° of latitude and 17° of longitude. Bangkok, the cap. of Siam, near the centre of the peninsula, lies on the same parallel as San Salvador, Cape Verd, Lake Tchad, Mocha, and Madras.

Area and Population.—These are very uncertain, owing to our imperfect knowledge of the country, but according to the best authorities, the area is about 889,105 sq. m., and the population 25,935,000. The statistics of the different states are as follows:—

	Area in Square Miles.	Population.
British Possessions,	93,664	2,562,496
Birma,	190,510	4,000,000
Siam,	309,000	5,000,000
Malaya,	45,000	200,000
Anam or Cochin-China,	220,000	12,000,000
Lower Cochin-China and Cambodia,	45,000	1,500,000

Thus the entire population is considerably less than that of the British Isles, while the area is seven times greater. The British possessions, equal in size to Great Britain, do not nearly equal Scotland in point of population. The independent portion of Birma is three times larger than England, but has only one-fifth its population. Siam, with ten times the area, has not double the population of Scotland; while Anam, with double the population of Ireland, has nearly seven times its area.

Surface and Mountains.—A series of mountain-ranges running parallel with the meridians, and enclosing between them long narrow river-basins, form the most remarkable characteristic of the country. The Irawadi is at once the great fertiliser and the commercial highway of Birma. The upper courses of the Sitang and the Salwen also flow through the Birmese empire, but very little is known regarding them. The Meinam is to Siam, and the Me-Kong or Cambodia to Anam, what the Irawadi is to Birma. The mountains of Arakhan, between the Irawadi and Bay of Bengal, attain an elevation of 5600 ft., while Tidi-bang-sa in Malaya rises to an altitude of 6561 ft..

Political Divisions.—The principal political divisions of the Eastern Peninsula will be found enumerated in the preceding table. But, besides these, there is a large territory of unknown dimensions in the very centre of the peninsula, known as the Laos or Shan states, surrounded by, or intermixed with, the Birmese or Siamese dominions. Many of the tribes are tributary to these two kingdoms, but east of 101° they claim to be independent, and live a pastoral and nomadic life. The narrow portion of the Malay peninsula, as far south as lat. 5°, is subject to Siam, while the territory still farther south is divided between several independent chiefs—the principal of which are Perak, Johore, Pahang, and Salangore. The French, in 1862, established a colony at the mouth of the river Me-Kong or Cambodia, which they denominate Lower Cochin-China; while in 1863 they established a protectorate over the formerly independent kingdom of Cambodia. The towns in the British possessions have been enumerated under Hindustan; those of the other states are as follows:—

BIRMA.—Mandelay, Monchobo 5, Ava 30, Amarapura 30, Bhamo 10 (Irawadi).

SIAM.—Bangkok 350, Ayuthia 100 (Meinam), Tringanu 60 (Gulf of Siam), Cantaburi 30, Phunga 20 (Str. of Malacca).

MALAYA.—Perak, n., Salangore, n. (Str. of Malacca), Johore, n., Pahang (China Sea).

ANAM OR COCHIN-CHINA.—Huè 100, Fai-fo 15 (China Sea), Kesho 100 (Tonquin).

LOWER COCHIN-CHINA AND CAMBODIA.—Saigon 180, Udong 12 (Me-Kong).

Descriptive Notes.—Omitting the British possessions, there are in Further India, so far as known to Europeans, only five towns of above 100,000 inhabitants (Bangkok, Ayuthia, Huè, Kesho, Saigon), one between 100,000 and 50,000 (Tringanu), and four between 50,000 and 20,000 (Ava, Amarapura, Cantaburi, and Phunga).

Mandelay, on the right bank of the Irawadi, is the present cap. of the empire of Birma. **Ava**, **Amarapura**, and **Monchobo** were successively the seats of government before Mandelay. The first two were reduced to ruins by an earthquake in 1839. **Bhamo** is a prosperous town, and the chief seat of commerce with China, exporting salt, rice, and gnapee, and importing woollen, cotton, and silk goods. **Bangkok**, cap. of Siam, by far the largest city in the peninsula, is principally built on bamboo rafts, and is generally styled the Venice of the East. The city is the seat of a large export and import trade, principally carried on with Singapur and China. **Ayuthia**, the former cap. of Siam, was nearly destroyed by the Birmese in 1767. **Cantaburi** is a fortified seaport, with an extensive export trade, and mines of precious stones in the vicinity. **Perak**, cap. of a small state in Malaya, which yields tin, rice, and ratans. **Salangore**, **Johore**, and **Pahang** are caps. of similar small independent states in the southmost part of the Malay peninsula. **Hue**, a populous city, cap. of the empire of Anam, is unparalleled in the East for the strength and magnitude of its fortifications, which were constructed by French engineers. **Kesho**, on the river Tonquin, is the cap. of a province of same name which abounds in gold, silver, copper, and iron; it is mainly noted for its lacquered ware, considered the finest in the East. **Saigon**, cap. of the French colony of Lower Cochin-China, was seized from the Anamese in 1860: it is fortified in the European style, and has a naval arsenal and docks admitting the largest ships. **Udong**, cap. of Cambodia, formerly belonging to Siam, and afterwards independent, is now tributary to France.

Capes, Islands, Gulfs, and Straits.—See under "Asia," p. 348.

Lakes.—The only lake of importance in Further India is the Tale-Sab, or "great lake," in Cambodia and Siam, and in the basin of the Me-Kong. During the rainy season it attains gigantic dimensions. It abounds with fish, and its shores are frequented by aquatic birds of all kinds.

Climate.—The climate, though hot and moist, is more salubrious for European constitutions than that of Hindustan. The mean annual temperature ranges from 77° to 79° Fah. The S.W. mon-

soon, lasting from May till the middle of September, is the rainy season in the W., where the annual fall of rain is from 150 to 200 inches. The N.E. monsoon, lasting from October to April, brings rain to the E. coast. The climate of Malaya is tropical, but the solar heat is tempered by sea-breezes. Here the thermometer ranges from 76° to 93°.

Minerals.—Gold, silver, copper, lead, tin, antimony, marble, serpentine, sapphires and numerous other precious stones; coal, nitre, sulphur, and petroleum or mineral oil, which is found in vast quantities in Birma. The wells occupy a space of about 16 miles square, and yield annually about 80,000,000 lb. of asphalt. Being cheaper than any other kind of oil, it is universally used in Birma, notwithstanding its disagreeable odour.

Botany.—The botany of Further India is similar to that of Hindustan, both being comprised in Schouw's "Seventh Phyto-geographic Region." (See under "India.") Forests are numerous, and yield much valuable timber, among which are teak-trees (admirably adapted for shipbuilding), trees yielding elastic gums (especially the taban or gutta-percha tree, and the gamboge, a valuable cathartic medicine), together with many woods used as dyes and perfumes. Agriculture is in a very backward state, but rice, cotton, indigo, tobacco, and the sugar-cane, are extensively grown.

Zoology.—Wild animals are very numerous, including the elephant, rhinoceros, tiger, leopard, buffalo, bear, hog, civet-cat, deer, antelope, goat, otter, with several species of baboons and monkeys; the peacock, parrot, and a variety of other birds of the richest plumage; the curlew, plover, and aquatic birds of all kinds. Alligators infest the large rivers, and the hooded snake, with several other noxious reptiles, the land. The sea abounds with an inexhaustible supply of fish. Mosquitoes and other insects exist in great multitudes.

Ethnography.—With the exception of the Malays, who possess the coasts of the peninsula which bears their name, and the Moys or negroes, who inhabit the mountains of Cochin-China and Cambodia, the whole of this extensive region is inhabited by nations of Mongolian origin. In physical aspect they greatly resemble the Chinese, though in certain districts they present a near affinity to the Hindus, to whom, however, they are greatly inferior in civilisation. The Birmese, however, resemble the Malays, though in appearance and language they approximate more closely than the latter to the inhabitants of Hindustan. With the exception of the Malayan (for which see under "Oceania") the *Languages* spoken in the Indo-Chinese states are all of the monosyllabic class and allied to the Chinese, but with many polysyllabic terms engrafted from Hindu and other sources. The tongues most widely spoken are the Birmese, Arakhanese, Peguese, Siamese, Laos or Law, Cambodian, and Anamite. The *Religion* of the entire peninsula is Buddhism, except in Malaya, where Mohammedanism prevails, and in parts of Anam, where the higher classes are disciples of Confucius. The most ab-

ject superstition prevails everywhere, and the grossest idolatries are practised. The introduction of Christianity has made great changes among the rude hill tribes of Birma, and the names of Carey and Judson will be held in lasting remembrance throughout the Christian world. Never in modern times have the missionaries of the cross been subjected to such bitter sufferings and privations as those which they endured in propagating the faith in Birma. The French Jesuit missionaries have a seminary and other schools in Siam; while in Bangkok, American Protestant missionaries print and circulate the Bible in Siamese and Chinese languages. Reading and writing are more generally diffused in Birma than among any people of the East. A translation of the entire Bible in the Birmese language was completed by Judson in 1834.

Government, &c.—In these countries absolutism and tyranny have been carried to the highest extreme, and the most servile submission is exacted by the monarchs from all classes of their subjects. In Birma and Siam the people are prohibited, under pain of death, from pronouncing the emperor's name. The laws are sanguinary, and the punishments awarded are marked by the greatest cruelty. With the exception of the priests and public functionaries, every male inhabitant is obliged to devote not less than every third year of his life to the public service, either as a soldier or as a labourer; while emigration is regarded as a treasonable offence, and equivalent to a theft of the prince's property. The Public Revenue of Birma, which does not probably exceed £25,000, is derived from a tithe of the profits on cultivation, from fisheries, mines, and petroleum wells, and from a poll-tax levied on the unsettled tribes. In 1870 the Imports of Siam amounted to £1,167,697, and the Exports to £1,317,922. There is no standing army in Siam, but every male is liable to serve for a portion of the year, and numerous war-junks are kept up, which are manned by Chinese and other foreigners. Anam has a standing army of about 50,000 men, besides the royal guard, and 800 elephants. The navy consists of 200 gun-boats, 100 galleys, and 500 smaller vessels.

Commerce and Manufactures.—In a commercial point of view, Siam is the most important Indo-Chinese state, and carries on an extensive intercourse with China, Java, and Singapur. There are few roads in the country, but a navigable canal connects the Meinam and Cambodia. The late king, who died in 1851, was an enlightened monarch, who trained his troops in the European manner, made canals and roads, built ships, introduced steamers, encouraged arts and commerce, and established printing from types—previously unknown in Siam. The principal manufactures in Siam are vases, urns, gold-beating, iron-founding, fine cloth, glass-wares, and pottery. Mines of copper, iron, lead, and tin are abundant and extensively wrought. The commercial transactions of the Birmese are individually on a small scale, though the aggregate is considerable. Principal exports, raw cotton, teak-wood, catechu, stick-lac, beeswax, elephants' teeth, gold, and silver. The Birmese are celebrated

for bell-casting and gilding, dyeing silk and other fabrics. The chief outlet for its commerce is China. The people of the Laos sell ivory, skins, gold, musk, gums, &c., to the Chinese and Siamese in exchange for pottery, glass, &c. This country also furnishes the enormous trees of which the Chinese make masts for their largest war-junks. The French colony exports dried fish, cocoa-nut oil, buffalo hides and horns, mats, Arakhan nuts, cotton, rice, sugar, tobacco, and silk. In Anam the emperor monopolises all the foreign trade, in which five ships are employed—the commerce being conducted for the most part with Canton, Batavia, and British India.

Table of Rivers and Towns.—The following table, which is in continuation of that given under Biluchistan, embraces all the most important rivers and towns of Hindustan and Further India. The rivers belong to three great basins—viz., those of the Arabian Sea, Bay of Bengal, and the China Sea.

Basins inclined to the Arabian Sea.

Rivers.	*Towns.*
Indus,	Karachi, n., Thattha, Haidarabad, Shikarpur, Iskardo.
Gundava,	Gundava, n., Kelat.
Nari,	Dadur.
Satlej, *l*	Bhawalpur, Ludhiana, Sirhind, n., Ambala.
Chenab,	Multan.
Ravi, *l*	Lahur, Amritsar, n.
Jehlum,	Kashmir.
Bias,	Jallundur, n.
Kabul,	Peshawar, Jelalabad, Kabul, Istalif, n.
Kamah,	Kandeish, n., Chittral.
Logur,	Ghuznee, n.
G. of Cutch,	Bhuj, n.
Luny,	Joohpur, n., Pali. Ajmir.
Suraswutty,	Puttun, Pahlunpur.
G. of Cambay,	Cambay.
Sabarmati,	Ahmadabad.
Mahi,	Baroda.
Nerbudda,	Gurrah, Jabalpur, Mundlah.
Tapti,	Surat.
Konkan Shore,	Bombay, Panjim, *Goa.*
Kanara Coast,	Mangalur.
Malabar Coast,	Kalikut, Cochin, Travanderam.

Basins inclined to the Bay of Bengal.

Kaveri,	Tranquebar, Tanjur, Trichinapalli, Seringapatam, Mysur.
Punnair,	Bengalur.
Coromandel Co.,	Pondicheri, Madras.
Palar,	Arcot, Vellur.
Krishna,	Nizampatnam, n., Machhlipatnam, Kolapur.
Musi, *l*	Haidarabad, Sikandarabad.
Tungabhadro,	Karnul.
Hinderi,	Ballari.
Bimah, *l*	Punderpur.
Muta-Mula,	Puna.
Godavari,	Rajamahendrie, Nasik.
Weingunga, *l*	Seuni.
Kanhan,	*Kampti.*
Nag,	Nagpur.
Manjera,	Beder.
Purna, *l*	Assaye.
Dudhna,	Aurangabad.
Nuglandi,	Shikacolam.
Mahanadi,	Puri, Katak, Sambhalpur.
Ganges,	Calcutta, Chandrnagar, Kalna, Plassy, Boglipur, Patna, Benares, Mirzapur, Allahabad, Kanhpur, Farrackhabad, Haridwar.
Damuda,	Bardhwan.
Atri, *l*	Sikhim.
Cosa,	Purneah.
Bishnmati,	Patan, Khatmandu.
Fulgo,	Behar, Gaya.
Sone,	Suhagpur.
Murar,	Sirgujah.
Ghagra, *l*	Oudh, Faizabad.

Basins inclined to Bay of Bengal (continued).

Rivers.	*Towns.*
Rapti, *l*	Gorakhpur.
Gumti, *l*.....	LUKNOW.
Tons,.....	REWAH, n.
Jamna,.....	ALLAHABAD, AGRA, BHURTPUR, n., Matra, DELHI.
Cane,.....	Banda, SAGAR.
Betwa,.....	Datiya, Jhansi, BHOPAL.
Sindh,.....	GWALIOR, n.
Chambal,...	BUNDI, n., KOTA, DHAR.
Bunas, *l*..	JAYPUR.
Sipra, ...	DEWAS, Ujjain, INDUR.
Chitang,....	JHIND.
Kali Nadi,....	MIRAT.
Ramgunga,	BAREILLY, Moradabad, Rampur, ALMORA, n.
Gurrah, *l*...	Shahjahanpur, Pilibhit.
Brahmaputra,...	DACCA, n., LASSA, n., Shigatze, Teshu-Lombu.
Nilkomar, ...	KUSH-BEHAR.
Godada, ...	TASISUDON.
Chittagong Co.,	CHITTAGONG.
Koladain, ...	Arakhan.
Irawadi,.....	RANGUN, Prome, Ava, MONCHOBO, n., Amarapura.
Pegu, *l*.....	PEGU.
Kongbo,....	MUNIPUR.
Sitang,.....	Tongo.
Saluen,.....	MULMEIN.
Str. of Malacca,.	Phunga, George Town, Malacca, Singapur.

Basins inclined to the China Sea.

E. Co. of Malacca,	Jobore, Pahang.
G. of Siam, ...	Tringanu, Ligor, Cantaburi.
Meinam,.....	BANGKOK, Ayuthia, Nan-rung, n., Changmai.
Me-kong,.....	Udong, LANCHANG, Yoong-tchang-foo.
Saigon,.....	SAIGON.
E. Co. of Anam,.	Fai-fo, HUE.
Tonquin,.....	Kesho, or Ca-chao, Ling-nan, Yuen-kiang.

THE CHINESE EMPIRE.

Boundaries. — N., Siberia; W., Siberia, Turkestan, and Kashmir; S., Hindustan and Further India; E., the Pacific Ocean. It extends from lat. 18° to 53° 28′ N., and from lon. 77° to 136° E.

The province Kan-su, in the N.W. of China proper, forms the centre of this gigantic empire, and is in the same lat. as the south of Spain, Sicily, Cyprus, Kashmir, Yedo, California, and N. Carolina; while Pekin, the capital of the empire, is on the same parallel as Madrid, Naples, Constantinople, Bokhara, and New York. The total area is roughly estimated at 4,117,000 sq. m., and the population at 425,000,000. It embraces fully two-sevenths of the Asiatic continent, or one-twelfth of the land surface of the globe, and contains two men out of every five of the human race (see p. 93). It embraces nearly the whole of the great eastern plateau of Asia; is situated almost wholly within the north temperate zone; holds the seaboard of the largest ocean from the G. of Tonquin (lat. 20°) to Victoria Bay (lat. 44° N.); and is traversed by several of the most gigantic rivers and the most stupendous mountain-ranges on the globe. By a recent treaty with Russia, China has been obliged to cede to that empire the entire territory north of the Amoor, and its tributary the

Argun, together with a large tract of country between the mouth of the Amoor and Victoria Bay. Still more recently (1864), the vast region formerly known as Chinese or Eastern Turkestan, in the extreme west of the empire, has thrown off the yoke of China and become independent. The existing chief divisions, therefore, of the Chinese Empire are, China Proper, Mongolia, and Tibet.

CHINA PROPER.

Boundaries. — N., Mongolia; W., Tibet and Birma; S., Anam, and the China Sea; E., the Pacific Ocean. Lat. 18°—42° N.; lon. 98°—122° E. Shanghae, on the central parallel, is nearly in the same latitude with Marocco, Alexandria, Jerusalem, Lahur, and the head of the G. of California.

Area and Population.—The estimated area is 1,609,500 sq. m., and the population 405,000,000, or 293 per sq. m. The greatest length is 1600 m., while the breadth varies from 900 to 1300 m. It is twelve times the area of the British Isles; considerably larger than Hindustan, it contains nearly double its number of people, or one-third of the whole human race. Incredible as this density of population may appear, it does not much exceed that of the British Isles, and is greatly less than that of Belgium, though it is more than double that of Hindustan.

Surface and Mountains.—The eastern half of China Proper, consisting mainly of the lower basins of the Pei-ho, Hoang-ho, Yang-tse, and Canton River, is, for the most part, a great alluvial plain, celebrated for its fertility and the unrivalled density of its population. This plain, varying in breadth from 150 to 400 m., and embracing an area of about 210,000 sq. m., lies E. of the meridian of 110°. The western half is highly mountainous. The Yun-ling, which separates China Proper from Tibet, runs from N. to S. between the upper courses of the Hoang-ho and Yang-tse, and attains an elevation of 12,000 ft. From this backbone of the country three lateral ranges proceed eastward to near the coast—viz., the Yu-ling, S. of the Canton River; the Nan-ling, 8000 ft. high, between the Canton River and the Yang-tse; and the Pe-ling, between the Yang-tse and Hoang-ho. The coasts are low, and in some parts swampy, except between the mouths of the Canton River and the Yang-tse, where they are high and rocky.

Political Divisions.—China Proper is divided into nineteen provinces, each of which, on an average, is considerably larger than Great Britain. Formerly the number of provinces was eighteen, but now the province of Leao-Tong, north of the Great Wall, is included, as it forms an appanage of the royal family. Only a limited number of the great cities of China is given in the following lists, and even these are still very imperfectly known to Europeans.

SEVEN EASTERN OR MARITIME PROVINCES.

Quang-tung.—Canton 1200, Victoria 30, Macao 52, Chow-king (Choo), Lien-chow (S. coast), Chow-choo (Han), Swatow (E. coast), Kien-chow 100 (I. Hainan).

Fo-kien.—Foo-chow 1000, Yen-ping (Min), Amoy 250, Chang-chow 800 n. (Fo-kien Chan.), Tai-wan (I. Formosa).

Che-kiang.—Hang-chow 700 (Tsien-long), Wan-chow n., Tai-chow n., Ning-po 200 n. (coast).

Kiang-su.—Nanking 500 (Yang-tse), Shanghae 135 (Woo-sung), Soo-choo 1500 (Gt. Canal), Hwai-ngan (Hoang-ho).

Shan-tung.—Tsi-nan (Ta-tsin), Yen-chow n., Tong-chang (Gt. Canal), Teng-chow (G. Pe-chi-li).

Chi-li.—PEKING or Pekin 1648 n. (Pei-ho), Tien-tsin (Eu-ho).

Leao-tong or **Ching-king.**—Moukden (Leao-ho), King-chow, Tung-whang n. (Yellow Sea).

SIX CENTRAL PROVINCES.

Shan-se.—Tai-yuen, Pin-yang, Fuen-chow (Fuen-ho).

Ho-nan.—Kai-fong 1000, Quei-te n., Hoai-King (Hoang-ho).

Ngan-hwi.—Ngan-king, Tai-ping, Chee-chow (Yang-tse).

Kiang-si.—Nan-chang (Kan), Kin-te-ching 1000 (Po).

Hoo-pe.—Wo-chang, Han-kow (Yang-tse), Siang-yang (Han).

Hoo-nan.—Chang-sha, Heng-chow, Yong-chow n. (Heng).

SIX WESTERN PROVINCES.

Quang-si.—Quei-ling (Quei), Sin-chow (Choo), Chin-ngan (Ngo-yu).

Yun-nan.—Yun-nan (Tien-chi), Li-kiang (Yang-tse), Lin-ngan, Yuen-kiang (Tonquin), Yoong-chang (Me-kong).

Quei-chow.—Quei-yang n., Se-nan (Oo), Chin-yuen, Ping-yoo (Yuen).

Se-chuen.—Ching-too, Sioo-choo (Min), Poo-kiang (Kia-ling).

Kan-su.—Lan-chow (Hoang-ho), Koong-chang (Wei-ho).

Shen-se.—Si-ngan (Wei-ho), Han-chong (Han).

Descriptive Notes.—MARITIME PROVINCES: **Canton**, also called **Quang-chow**, at the head of the Bocca Tigris, or estuary of the Canton River, is one of the five cities open to foreigners, and the principal entrepôt of commerce in the empire: its exports amount to four millions sterling annually, and its imports to two and a half millions. Its principal exports are tea, silk, precious metals, cassia, sugar, and porcelain; and the principal article imported is opium, from Hindustan—the sale of which, though illegal, is tacitly permitted. In 1839 the Chinese Government

forcibly obliged the English at Canton to deliver up 20,283 chests of opium, which having been destroyed, and compensation refused, war was declared by England. In 1841 the Chinese were totally defeated at Canton, and the city was seized by the British, but ransomed by the payment of 6,000,000 dollars. In 1847, in consequence of fresh insults on the part of the Chinese Government, the Bogue forts were captured by the British, and a new convention agreed to: subsequent grievances led to the capture of the city by the British and French troops in December 1857, when Yeh, the governor, was made a prisoner of war, and conveyed to Calcutta. **Victoria**, on Hong-Kong Island, on the E. side of the Bocca Tigris, opposite Macao, and 80 m. S.E. of Canton, became a British possession by virtue of a treaty with the Chinese in 1841: it has numerous storehouses and European dwellings, and steam communication with England. **Macao** has belonged to the Portuguese since 1586. It is well fortified; but the harbour does not admit large ships, and there is no communication with the interior of the country: here, for a time, resided Camoens, the Portuguese poet, and here he is said to have composed the Lusiad. **Kiem-chow**, a large and populous city, capital of the Island Hainan, has extensive trade with Macao, Assam, Siam, and Singapur. **Foo-chow**, a very populous city, and one of the five opened to European commerce by the treaty of Nanking. It is distinguished for its commerce and the industry of its inhabitants: large quantities of cotton goods and blue cloth are here manufactured, and 500 ovens are constantly employed in the production of porcelain ware. The black-tea district is only 70 miles distant, and there are extensive lead-mines in the vicinity. In 1868, Foo-chow exported tea to the amount of £4,000,000 sterling, while its imports amounted to £1,700,000, one-half of which consisted of opium from India. **Amoy** is one of the five cities open to foreigners, and has great trade, especially with Formosa and the maritime provinces of China: manufactures of porcelain, grass-cloths, paper, and candy-sugar, which, together with congou tea, form the principal articles of export. Amoy was the great military depot of the province when taken by the English in 1841. **Chang-chow**, a very large and populous city, 36 m. S.W. of Amoy; its seaport is the great centre of the silk manufacture of the province. **Hang-chow**, at the southern terminus of the imperial canal, is the famous **Kinsai** of Marco Polo, and the capital, in his time, of Southern China; it has long been noted for its silk manufactures, particularly for its flowered taffetas and different kinds of satin. **Ning-po**, one of the five cities open to European trade, and regarded by the Chinese as one of the most beautiful cities in the Celestial Empire, is six m. in circumference, is enclosed by walls 20 ft. high, and is a place of great trade—the exports of tea alone being valued at £1,500,00. **Nanking** ("Court of the South"), capital of province Kiang-su, and at one time of the entire empire, is now greatly declined, though still one of the greatest seats of manufacture in China; its *nankeen* cloths, satins, silks, and crape, are reckoned superior to those made anywhere else, and it is the centre of a very extensive commerce; it is the residence of a viceroy, the seat of a great military depot, and the principal seat of literature in the empire: here was signed the treaty of peace between England and China, Aug. 29, 1842, by which European merchants and a British consul were allowed to reside at the ports of Canton, Amoy, Foo-chow, Ning-po, and Shanghae. **Shanghae**, the farthest north of the five ports above mentioned, and the chief commercial port of the empire, carries on a direct trade with Central Asia, has a large coasting trade, with flourishing manufactures of flowered silks, iron-ware, glass, paper, &c. The annual exports are tea, to the amount of 74,000,000

lb. (in 1868), cottons £3,200,000, woollens and worsteds £1,000,000. Other exports are camphor, drugs, cassia, and the best porcelain. The imports consist mainly of opium from India, valued at £7,219,000 annually. It was taken by the British in 1842, when 171 pieces of cannon and a large amount of military stores were captured. **Soo-choo**, a very large city, and one of the most flourishing and populous in the empire, near Tai-hoo lake in the line of the Imperial Canal, and in the richest and most populous district of the country; it is celebrated for the splendour of its buildings and the excellence of its manufactures, including silk goods, said to be superior in variety and richness to those of any other city in China: its trade is very extensive, and the signs of its prosperity are everywhere visible. **Tsi-nan** is venerated as the residence of a former dynasty of Chinese sovereigns. **Peking** ("Northern Capital"), the metropolis of China since the thirteenth century, when Kublai Khan made it his residence instead of Nanking, the former capital, is situated on a sandy plain 100 miles from the sea and 50 miles S. of the Great Wall. It is said to contain 1,648,000 souls, and is therefore by far the most populous city in Asia, though less than half the size of London. It consists of two distinct cities, one of which is inhabited by Chinese, and is the seat of commerce; and the other by Tartars, divided into three separate enclosures,—the first of which contains the garrison—the second, the residences of the principal dignitaries of the empire—and the third, the palaces of the emperor and empress. Peking has a large printing and bookselling trade, with manufactures of glass, idols, and other articles; but the inhabitants chiefly depend for their subsistence on employment connected with the court. The description of the city given by **Marco Polo**, who visited it in 1271, is in many respects applicable at the present day. In 1860 Peking was invested by the allied French and **English**, since which time ambassadors from both nations have resided there. **Tien-tsin**, the port of Peking, is noted for the treaty of 1858, between the Chinese and British. Here, in 1870, a number of French missionaries were cruelly massacred by the natives. **Moukden**, 380 m. N.E. of Peking, capital of the new province Leao-Tong, was the residence of the **Mantchoo** sovereigns before they conquered China.

CENTRAL PROVINCES.—**Tai-yuen**, a large and populous city, the occasional residence of the sovereigns of the last reigning dynasty, has manufactures of fine porcelain, felt carpets, and iron-ware. **Kai-fong** is noted as the principal seat of the Jews in China. Here, it is said, no fewer than 1,000,000 of them reside, speaking the Hebrew language and practising their ancient religious rites. **Nan-chang**, a very populous city, famous for its porcelain, has a great trade in silks, furs, and idols. **Kin-te-ching**, with a million inhabitants, contains the largest porcelain manufactory in the world: five hundred furnaces are constantly at work, but no foreigner has ever been admitted within the walls, lest the secrets of the process should be revealed. **Wo-chang**, in one of the most fertile districts of the empire, is one of the largest of the inland towns, and carries on an extensive commerce.

WESTERN PROVINCES.—**Quei-ling**, or **Kwi-lin**, in a fine valley watered by the Quei-kiang, is said to be fortified in the European style. **Yun-nan**, on the least mountainous part of the table-land, is a considerable place, and carries on an active trade with the Birman empire. **Kwei-yang**, a comparatively small town, with mines of gold, silver, vermilion, and iron in the vicinity. **Ching-too**, a populous city, adorned with fine edifices, and the seat of an extensive trade, was at one time an imperial residence, but was ruined by the Tartars in 1646. **Lan-chow** carries on a brisk

trade with the tribes inhabiting the table-land to the N. and W. of it. **Si-ngan**, a large and populous city, which is often compared with Peking itself; it was at one time the metropolis of the empire, is strongly fortified, carries on a considerable trade, has manufactures of military and agricultural implements, and is the principal military depot for the northern provinces.

Islands.—Hainan, at the mouth of the G. of Tonquin; Macao, Lantao, and Hong-Kong, in the Bocca Tigris, or estuary of the Canton river; Formosa, Amoy, and Hae-tan, E. of province Fo-kien; Chusan Archipelago, N.E. of province Che-kiang; Tsung-ming, in the estuary of the Yang-tse.

Hainan, with an area of 14,000 sq. m., and a population of about 1,000,000, is remarkably fertile along the coasts, while in the interior the mountains rise beyond the limit of perennial snow. It produces sandal-wood, ebony, rosewood, sugar, wax, pearls, and coral. **Macao** belongs to Portugal (p. 408). **Hong-Kong**, though small, rocky, and barren, is a valuable possession of Great Britain, on account of its political and defensive position. **Formosa** is a large island E. of Central China: area, 15,000 sq. m.; population, 2,000,000. It is traversed in the direction of its greatest length by a chain of volcanic mountains, some of which attain the height of 10,000 feet. Surface generally fertile, producing rice, camphor, tobacco, millet, fruits, dye-woods, jute, and spices. Coal-fields have recently been discovered. The **Chusan Islands**, nearly opposite Ningpo, are of great value to China, as facilitating commerce with Japan.

Seas, Gulfs, and Straits.—See under "Asia," p. 348.

Lakes.—Tai-hoo or Great Lake, in Kiang-su, drained by the Woosung; Kao-you, Po-yang, and Toon-ting, in the lower basin of the Yang-tse; Hong-tse and Kao-yung in Kiang-su.

Climate.—The climate is eulogised as one of the finest in the world; but it is much colder in winter and warmer in summer than corresponding latitudes in Western Europe. Situated on the E. coast of Asia, the climate rather resembles that of corresponding latitudes of the American continent than any portion of Europe. In the southern provinces the winters are intensely dry and cold, though snow rarely falls at Canton. March and April bring fogs and a mild temperature; much rain falls in May; and from July to September there is intense heat, with hurricanes, typhoons, and thunderstorms. Mean annual temperature at Peking 54°.8, summer 81°, winter 56°.7.

Minerals.—The precious metals occur in small quantities: there are rich mines of iron, lead, copper, zinc, and quicksilver; and perhaps the only metal which the country is known not to possess is platina. Among other mineral substances may be mentioned salt, nitre, alum, and gypsum. Coal exists in vast abundance, especially in the basin of the Yang-tse, which is one vast coal-field; and, more important than all, inexhaustible beds of kaolin or porcelain earth of the finest quality. The early possession of this substance, and the great skill of the inhabitants in working it, has given the name of *China* to the beautiful ware which so long monopolised the markets of Europe. Nephrite, and various species of precious stones, especially agates, are also found.

Botany.—The vegetation of the southern provinces resembles that of Hindustan and Further India, and belongs to Schouw's seventh "Phyto-geographic region;" while Northern China, together with the eastern part of Mongolia and Japan, comprises the sixth region of that naturalist. The latter occupies a middle position between the vegetation of Europe and that of North America, with a considerable affinity to the Indian flora.

The most characteristic and valuable botanical product is the tea-plant, which, until recently, was almost peculiar to China. It is cultivated from Canton northward to Nanking, and extends westward over the greater part of the basin of the Yang-tse; but it is found in its wild state as far N. as Peking, and as far S. as Bangkok in Siam. The soil on which it grows is composed of disintegrated granite and ferruginous sandstone. The black teas are mostly prepared in Fo-kien, and the green in Ganhway, but both are derived from the same species of plant.—(See under "Exports.") Among the cultivated grains rice is the staple product; and among the trees and plants most common in the fields and gardens are the sugar-cane, cotton, hemp, tobacco, rhubarb, indigo, varnish-tree, camphor-tree, tallow-tree, and cinnamon. Olives, oranges, pine-apples, &c., are abundant, and the mulberry is extensively reared for the silkworm, an insect which is probably indigenous to China. Among forest trees the bamboo is the most highly prized, for building and other domestic purposes.

Zoology.—Most of the wild animals have long ago been extirpated, but the elephant, tiger, wild cat, rhinoceros, and tapir still occur in the south-western provinces. Among birds and fishes are found many beautiful and peculiar forms, while a few harmless reptiles still exist. The most noxious insect is the locust, which frequently commits great devastation. The domestic animals are few in number, but comprise the horse, ox, sheep, and swine, while the dog is uniformly of one variety—of a pale-yellow colour, and in form resembling our spaniel.

Ethnography.—The people belong to the Mongolian race, and are closely allied, both in appearance and language, to the Turanian family (p. 61). At a very early period the natives appear to have advanced to a considerable degree of civilisation, and to the practice of the arts of domestic life, especially those of printing, the invention of the mariner's compass, and the manufacture of silk and porcelain; but here they have paused, their government and institutions arresting the further progress of improvement.

Language.—The Chinese language forms the principal member of the great monosyllable family of tongues. This family is peculiar to the Mongol race, is confined to the S.E. angle of Asia, and comprises about fifty-three principal dialects, eighteen of which are spoken in China—every province having a dialect peculiar to itself—and the great majority of the remainder being rude and unwritten. The Chinese language, when written, is not phonetic, like the Indo-European and Semitic tongues, but ideographic. Each written character represents a thought, an idea, and not a sound. There is therefore no alphabet, properly so called, but every different word that can be articulated has a distinct character to represent it. The great national lexicon, published in the seventeenth

century by order of the Emperor Kang-he, contains 30,000 distinct characters, all of which, however, are derived from 214 fundamental forms, which constitute the foundation of their meaning, and the basis of arrangement in the lexicon. Most of the words contained in this great work have now become obsolete, and Morrison's Chinese Dictionary contains only 12,674 words. The same character or sign retains the same meaning all over China, but in every separate province the pronunciation given to it varies. Thus, a Bible printed in Chinese can be read and understood by every educated Chinaman from Peking to Canton, provided only he has the volume before his eyes; but the inhabitant of one province cannot understand the inhabitant of any other when reading audibly in his presence. A still more extraordinary characteristic of the language is, that each written character represents a number of widely-different significations, which are expressed by as many different tones of voice on the part of the speaker. This peculiarity renders it very difficult for Europeans to acquire a competent knowledge of the language.

Religion.—Three distinct systems of religious belief prevail in China. 1. *Fo*, or *Buddhism*, is the religion of the great mass of the people in China Proper, Mongolia, Mantchooria, and Tibet, the last-named country being its headquarters, and the seat of its most sacred lamas. 2. The *Taou* belief, or the system of the rationalists, is the next in importance as respects the number of its votaries. 3. *Ru*, or the doctrine of Confucius, which is adopted by the court and upper classes. China is believed to have been colonised about B.C. 2500. Its first religious belief, so far as known, was a system of devil-worship. Confucius, or Kung-fut-ze, the first great Chinese reformer, flourished about B.C. 600. His system does not differ essentially from that of Laot-ze, who was nearly his contemporary. Buddhism was not introduced till A.D. 60. "All the four religions are now established in China, and are regarded by the Chinese as equally true, but also as equally false, and the result is the utter extinction of all moral obligation. Their cruelty, lust, lying, thieving, and knavery can be exceeded by no statement which human language can embody."—('Religions of the World,' by W. Osburn. London: Seeley, Jackson, & Halliday.) Mohammedans are also numerous, especially in the province Shen-se, and Roman Catholics and Jews form a very small proportion of the population. Protestant missionaries have been settled in some of the maritime towns for the last fifty years. Dr Morrison was the first to occupy this wide field, and Dr Milne soon followed, both having been sent out by the London Missionary Society. Since then the number has gradually increased, and nearly all the Protestant missionary societies of Britain, Germany, and America have now their representatives in China, the total number of missionaries being at present from eighty to a hundred. Besides several single books of the New Testament, there are now three separate translations of the entire Scriptures, the first of which was executed in 1822, under the patronage of the British and Foreign Bible Society, and the last in 1854, when not fewer than 1,000,000 copies of the New Testament were sent out by the London Missionary Society, and circulated gratuitously far and wide.

Education and Literature.—The Chinese Government liberally encourages elementary knowledge, making that the only channel to office, rank, and honour. Accordingly, the taste for letters is almost universally prevalent, and schools abound in every town and village; but little useful information is communicated beyond the familiar arts of reading and writing. At Peking is a grand national university, supported by the state, but nothing is taught save the time-honoured principles of the ancient

sages. In respect to the number, importance, and authenticity of its literary monuments, China undoubtedly holds a high rank among Asiatic countries. Its classic works, named *King*, date from a very remote epoch, and its annals are the most complete and continuous that exist in any language, save the Hebrew—ascending as far back as to B.C. 2204. Literary history, criticism, geography, and biography, are the subjects of a crowd of works, remarkable for their order and regularity. But every branch of science is stereotyped, and there are few civilised countries where real science is at a lower ebb. Their knowledge of mathematics and astronomy is very limited, and they have made but little progress in the fine arts. Their sculpture is only remarkable for its nice finish; their architecture is deficient in grandeur and elegance; the only objects they can paint well are those of inanimate nature; while, in drawing, they are wholly ignorant of perspective. Yet they have been the authors of what are justly considered in Europe as three of the most important inventions of modern times—the art of printing, the composition of gunpowder, and the magnetic compass. Printing from wooden blocks was practised by the Chinese as early as the middle of the tenth century of our era. The invention of gunpowder, as compounded of sulphur, nitre, and willow-charcoal, is carried back to a very remote date; but its particular application to firearms seems to have been exclusively European. The attractive power of the loadstone had been known to them from remote antiquity; but its property of communicating polarity to iron is for the first time explicitly noticed in a Chinese dictionary finished A.D. 121. To these may be added two very remarkable manufactures, of which the Chinese were unquestionably the first inventors—those of silk and porcelain, in the latter of which they have never been surpassed.

Government, &c.—The form of government is in theory an absolute despotism, the emperor uniting in his own person the attributes of supreme magistrate and sovereign pontiff. The emperor is of the Mantchoo dynasty, and the great offices of state are usually held by Mantchoos. The governors of provinces are called *viceroys*, and those of cities *mandarins*. The authority of the emperor, even in the heart of China Proper, is held by a very insecure tenure. The Meaou-tu tribes in the south-western provinces have repeatedly risen in rebellion; and secret societies—the principal of which is called the Triad, which has for its object the restoration of a native dynasty—are rapidly extending. A civil war of the most formidable description, and characterised by the most revolting barbarities, has for many years been raging in all parts of the country. The Finances of the empire are consequently in a very unsettled state, though, if any credit is to be attached to official statements, the *Revenue* amounts to about £50,000,000 annually. The *Military Force* probably amounts to about 850,000 soldiers, including the troops stationed in the tributary provinces. The *Navy* consists of two fleets of war-junks, one for the sea, and another for the rivers, each amounting to 1000 vessels, and carrying about 188,000 marines. Hitherto the army and navy have been in a state of extreme inefficiency, and utterly powerless when opposed to European forces; but now the Chinese no longer rely on their time-honoured weapons and tactics, but are providing themselves with gun-boats, rifles, and rifled cannon, and are being trained by European officers.

Among the defences of the country must also be reckoned the Great Wall, constructed in the third century before the Christian era, as a barrier to the incursions of the Tartars. Commencing at a fort on the Gulf of Pe-chi-li, it extends westward along the northern frontier, over hill and dale, for 1250 miles, with a height varying from 15 feet on the mountains to 30 feet on the plains. It is a rampart of earth, broad enough at the top to admit of several horsemen passing each other, is faced with brick and stone, and strengthened at regular intervals by large square towers, with gates for the convenience of travellers. But it is now falling into decay, the gates are negligently guarded, and smugglers pass openly through its crumbling breaches.

Manufactures and Commerce.—The manufactures are of the most varied, and often of the most exquisite, description. Their porcelain, silks, nankeens, embroidery, and lacquered ware, are unrivalled for their excellence. They are also noted for their skill in engraving, in the carving of ivory, tortoise-shell, mother-of-pearl, horn, and other ornamental articles, in the manufacture of ink, paper, cabinet-work, and bell-casting, all being executed without the aid of machinery. The *Exports* consist mainly of tea, of which 130,000,000 lb. were sent to Britain alone in 1873, besides which they sent us silk to the value of £4,800,000. Other exports are nankeen, porcelain, lacquered ware, and articles of ivory. The total value of the exports, in 1873, amounted to £25,000,000, of which about £12,500,000 worth was sent to Great Britain. In the same year the total imports were valued at £25,000,000, seven-eighths of which were from Great Britain and her colonies. The chief articles were opium to the value of about £11,000,000, and edible birds' nests (so highly prized in Chinese cookery), both of which come from India; cotton yarn, cotton cloth, linens, woollens, beer, iron, steel, and glass, from Great Britain; cattle and raw silk from Turkestan; furs, sheep, and woollen goods from Russia, &c. The trade with Russia is wholly conducted at Kiakhta, on the Mongolian frontier, and with other countries at the five seaports, Canton, Amoy, Foochoo, Ning-po, and Shanghae, opened by the treaty of Nanking in 1842; while by the treaty of Tien-tsin, in 1858, British subjects may frequent the cities and ports of Neu-Chwang, Swatow, Han-kow, Chin-kiang, Kew-kiang, Teng-chow, and Tien-tsin.

Russia is the only country that has managed to maintain habitual relations with the court of Peking. She has ancient treaties under which a certain number of Russians are allowed to live in the capital, and to hold intercourse with the authorities there; but the position has always been an ignominious one, they have never been allowed to hold intercourse with any of the ministers of high rank, and they have never exercised any real influence. Of late, however, great changes have taken place. Russia, who has no unfettered maritime outlet in Europe or Western Asia, has found the means, down the river Amoor, of getting an outlet into the China Sea and the Pacific. Recently large concessions have been made to Russia in the unfettered navigation of the Amoor, and in the cession of a large tract of territory on the southern side of that river. The internal commerce is enormous; that of the eastern provinces is conducted chiefly by the Grand or Imperial Canal, which extends from Hang-chow to the Eu-ho, being a distance of 700 m., with a width of

200 ft. Other canals and rivers carry on the communication to Canton, thus uniting that city with Peking. There are numerous other canals connecting the navigable rivers, and probably the tonnage belonging to the Chinese is little short of the combined tonnage of all other nations. There are, as yet, no railways in China, nor any available communication between it and British India, which, in its Birman provinces, is only, in some places, 250 m. distant from the western frontier of China Proper. Recently, however, various schemes have been advocated for opening up railway communication between India and Western China. Our Indian Government propose one route from Calcutta, by Dacca, Silhit, and Bhamo, to Tali-foo in province Yun-nan. The advocates of this route maintain that it would be the means of introducing the opium of India, on a large scale, into Western China, so as to check the yearly increasing production of the drug there, as also induce Chinese "coolies" to resort to the Assam and Silhit tea plantations, so much in need of labourers to make them profitable speculations. Another, and probably more practicable route—viz., that proposed by Captain Sprye—begins at Rangun, proceeds northwards till it meets the Saluen river, thence along its bank to Kiang-tung in the Laos states, and then to Kiang-hung on the river Me-kong, about 1240 m. from its mouth, and within 40 m. of the Chinese frontier city of Esmok in province Yun-nan. This province, together with that of Se-chuen, has a population of about 40,000,000, or one-third more than that of the United Kingdom.

MONGOLIA

(Including Mantchooria and Corea).

Boundaries.—N., Siberia, from which it is separated in part by the Amoor and its tributary the Argun, and in part by the Sayansk and Altaian Mountains; W., South-western Siberia and Kashgaria or Eastern Turkestan; S., Tibet and China Proper; E., Sea of Japan and part of Siberia. Lat. 36°—53° 28′ N.; lon. 80°—136° E.

Urga, the cap. of Mongolia, near its northern frontier, is in the same latitude as Paris, Stuttgart, Vienna, Ekaterinoslav, and the N. shores of the Caspian and Lake Superior.

Area and Population.—Including Mantchooria and Corea, but omitting Eastern Turkestan, the area is roughly estimated at 1,831,800 sq. m., or five-eighths the area of Europe. The population is very uncertain, but it does not probably exceed 14,187,000, or half that of Great Britain.

Surface.—This vast dependency of China, separated from Tibet by the Kuen-Lun Mountains, from Kashgaria or Eastern Turkestan by the Thian-Shan range, and from Siberia by the Altaian, Sayansk, and Yablonoi Mountains, comprises the immense table-land of Central Asia—the most extensive plateau on the globe—and is occupied in its centre and west by the huge, almost rainless, and sandy desert of Gobi or Shamo, 1200 m. long, from 500 to 700 m. wide, and 3500 ft. in elevation. The north of Mongolia is richly wooded; considerable tracts in Mantchooria and Western Mongolia are highly fertile,

producing corn of all kinds, rice, cotton, and fruits, which, with cattle and various mineral and manufactured products, form the principal exports. The remainder is peopled by pastoral tribes, whose camps, like moving cities, are constantly passing from one place to another.

Divisions.—Mongolia is subdivided into the following geographical sections, which, in a loose sense, may be regarded as provinces:—

COREA.—King-ki-tao (Kiang-ho), Ping-hai (E. coast).

MANTCHOOORIA.—Kirin-Ula (Sungari), Saghalien-Ula or Aigun (Amoor), Tsi-tsi-har, Mergen (Nonni).

MONGOLIA PROPER.—Urga or Kurin 7 n. (Orkhon), Mai-mai-tchin (Selenga), Uliassuti n. (Djabekan), Kobdo n. (L. Ike Aral).

DZUNGARIA.—Ili or Guldja 80 (Ili), Tarbagati (180 m. N. of Ili), Barkol (L. Barkol).

Descriptive Notes.—**King-ki-tao**, the residence of the King of Corea, who is tributary both to China and Japan. **Kirin-Ula**, cap. of S. Mantchooria, is beautifully situated on the Sungari, a large affluent of the Amoor. **Saghalien**, a populous city in the N. of Mantchooria, on the left bank of the Amoor, and near the Russian frontier, carries on a great trade in furs. **Urga** or **Kurin**, an important town in Northern Mongolia, near the border of Siberia, and on the great caravan route from Peking to Kiakhta: it is the seat of the deified Lama of the Mongols. **Mai-mai-tchin**, a very flourishing town on the Mongolian frontier, opposite Kiakhta in Siberia. All the Russian exports to Peking pass through Mai-mai-tchin and Urga. **Ili**, a large town in the extreme W. of the Chinese Empire, cap. of Dzungaria, and an entrepôt of the trade of Central Asia.

Islands, Seas, Gulfs, and Straits.—See under "Asia" (p. 348).

Rivers and Lakes.—The rivers will be found enumerated after "Tibet" (p. 421). The principal lakes are *Kessel-Bashi* and *Zaisan*, near the source of the Irtish; *Ike Aral*, N. of Kessel-Bashi, receives the rivers Djabakan and Kobdo; *Ubsa*, N.E. of Ike Aral, and at the foot of the Altai Mountains; *Lop-nor*, S. of the Thian Shan Mountains.

Climate.—In so wide a region the climate must be highly varied, but few data exist to speak of it with precision. It is, however, much colder in winter and warmer in summer than France and other countries in corresponding latitudes of Western Europe. Scarcely any rain falls in the great desert, and the few oases that occur afford but a scanty vegetation. The climate of Mantchooria presents the extremes of heat and cold, and considerably resembles that of Canada. The rivers are frozen over as early as the 20th November, and are not navigable till the middle of March. In Mongolia Proper, and especially in the great desert, the winter winds blow furiously, while the temperature, as early as October and November, ranges from 24° below zero Fah. to 40°.

Natural Products.—Coal prevails extensively in all parts of Mantchooria, Corea, and the province Leao-Tong. The coal is of excellent quality, and the seams are of great thickness. Gold also is found in the S. of Corea, where the auriferous district extends along the E. coast for a space of 40 m. long by 10 broad. The extensive tract of

country between the Great Desert and the Siberian frontier is mountainous, well wooded, fertile, but uncultivated. The forests consist of pines, fir, birch, ash, elm, and white poplar; as also red currants, wild peaches, and various shrubs. Mantchooria is one of the chief localities whence the Chinese obtain the wonder-working *gin-seng*—a species of ivy, the root of which is used as a stimulant—and here rhubarb is extensively cultivated. The cork-tree and the aspen are indigenous on both banks of the Amoor. The desert is sandy and woodless; but, for a few weeks in spring, after the short rainy season, it is covered with a luxuriant herbage. Among wild animals may be mentioned the tiger, wolf, jackal, lynx, fox, antelope, argal, yak; with wild horses, camels, and asses in the desert; the Bactrian or two-humped camel, in the Thian Shan mountains; and boars, bears, wolves, hares, foxes, sables, squirrels, &c., in the forests of northern Mongolia.

Ethnography.—This country has been for ages the domain of the Mongolian race—one of the great subdivisions of the human family; to it belonged Attila, Genghis Khan, Kublai Khan, Timur the Tartar, and those other mighty warriors, whose rapid conquests are compared by Gibbon to the primitive convulsions of nature, which have agitated and altered the surface of the globe. They are allied to the Turks and Chinese, and are subdivided into numerous tribes, the principal of which are the Mongolians Proper, Kalmucks, Khalkas, and Mantchoos. While Mantchooria has become an integral part of the Chinese empire, China itself has been governed by a dynasty of Mantchoo princes since 1624.

All the *Languages* spoken in Mongolia belong to the Turanian or Finno-Tartarian family (see under "Asia," art. 19, and at p. 315). The chief of them are the Mantchoorian, Mongolian, and Corean. The elemental principles of the first two are almost identical with the Tartar and Finnish. In the simplicity of their structure and the total absence of all inflections, properly so called, they approach nearer than any other class of languages to the monosyllabic type. The Corean greatly resembles the Japanese, but many Chinese words enter into its composition, Corea having received its literature and civilisation from China; but the alphabet is phonetic, and not symbolic, like the Chinese. The *Religion* of Buddha prevails in Mantchooria and Mongolia; Buddhism and Mohammedanism in Eastern Turkestan (which does not now form a part of the Chinese Empire); and Buddhism and Confucianism in Corea.

Industry and Commerce.—The natives of Mongolia, who are strong, sturdy Tartars, live a nomadic life, pitching their tents when and where they please, are exempt from taxes, and subsist principally on their flocks of sheep, and by selling the wool to the Chinese and Russians. Fermented mare's milk, called *Koumiss*, is their favourite drink. In Mantchooria and Corea, cotton cloth and silk are manufactured to a considerable extent, while along the seaboard, mining and fishing are pursued. Immense caravans, laden with tea, silk, and grain from China, and with furs and fish from Siberia, are constantly crossing through the country, Kiakhta being the great mart of exchange.

TIBET.

Boundaries.—N., Mongolia and Eastern Turkestan, from which it is separated by the Kuen-lun mountains; W., Kashmir; S., Nepal, Sikhim, and Bhotan, from which it is separated by the Himalaya; E., the Yung-ling mountains, separating it from China Proper. Lat. 27° 40′—36° 10′ N.; lon. 78°—104° E. Lhasa, the cap., on the central parallel, is in the same latitude with Mogadore, Cairo, Bassorah, Multan, Shanghae, and New Orleans.

Area and Population.—The area is conjectured to be about 675,700 sq. m., or more than five times the area of the British Isles. The population is probably about 6,000,000, or nearly twice that of Scotland.

Surface.—A lofty table-land, from 15,000 to 16,000 ft. in elevation, enclosed and traversed by stupendous mountain-chains, the loftiest on the globe, and giving origin to nearly all the great rivers of Southern Asia—as the Indus, Satlej, Brahmaputra, Irawadi, Yang-tse, and Hoang-ho. Among these chains may be named the Himalaya in the S., the Karakorum in the N.W., the Kuen-lun in the N., the Yun-ling in the E., and the Chor-Katshi mountains, running from the S.W. to the N. Some of the mountain-passes are of great elevation, as the Bogola Pass (19,220 ft. above the level of the sea), between the Satlej and Indus; the Gugti-la Pass, E. of Gartok, 19,500 ft.; and the Mana Pass, between Tibet and Gurwhal, 18,570 ft.

Divisions.—The country is still very imperfectly known to Europeans, but it is understood to comprise two divisions—Eastern and Western Tibet. Balti or Bultistan, and Ladakh, formerly belonging to Tibet, are now regarded as parts of Kashmir:—

EASTERN TIBET.—Lhasa 24 (Muran, *aff.* San-po), Jiga-gungar 100, Shigatze 100 (San-po).

WESTERN TIBET.—Teshu-Lombu 20 (San-po), Tashigong, Gortopè (Indus), Chaprung (Satlej), Bathang (Kin-sha), Tsiamdo (Me-kong).

Descriptive Notes.—**Lhasa,** the cap. of Tibet, and the sacred cap. of all Buddhistic countries, is a fortified commercial town, containing a Chinese garrison, with numerous towers, bazaars, and temples; it is the residence of the Grand Talè Lama, the pontifical sovereign of Tibet, who lives in a vast square temple, which, with its precincts, covers many acres, and has contiguous to it four celebrated monasteries, said to be inhabited by 4000 recluses. These monasteries are greatly resorted to by the Chinese and Mongols, as schools of the Buddhist religion and philosophy: the interior of the temple is filled with idols, treasure, and works of art; and there is perhaps no spot on the globe where so much gold is accumulated for superstitious purposes. **Teshu-Lombu,** the western cap., contains the palace of the second priest or Bogdo Lama, and the residence of a Chinese functionary, whose duty is to watch the proceedings of the

priests, who constitute the great bulk of the population. **Gortope, or Gordokh,** is little more than a large camp, situated in a plain covered with flocks of sheep, goats, and yaks, but forms in summer a great trading station between Tibet and N. India.

Lakes.—Koko-nor and Tcharin-nor, near the sources of the Ho-ang-Ho; Tengri-nor and Palti, in the basin of the Brahmaputra; Rhawan Rhadi 15,000 ft. above the sea, and Mansarowar, at the source of the Satlej. Nearly all the lakes are brackish.

Climate.—The climate is excessively dry, and its effect on vegetation resembles that of the dry heat of the Sahara. The trees wither; their leaves may be ground to powder between the fingers; planks and beams break, and the inhabitants cover the timbers of their houses with wet towels, in order to preserve them from the destructive effects of excessive dryness. The timber never rots. The flesh of sheep exposed to the open air becomes dry, and may be ground like bread, and thus preserved for years. This flesh-bread is a very common food in Tibet. Goître, syphilis, ophthalmia, hydrophobia, and smallpox, are among the most prevalent diseases.

The limit of perennial snow is higher on the Tibetan side of the Himalaya than on the Indian; the former varying in different places from 16,000 to 17,400 ft. above the sea, while in the latter it descends to 16,200 ft. Barley comes to maturity from 14,000 to 15,000 ft. above the sea-level; wheat succeeds well as high as 12,000 ft.; birch to above 14,000 ft.; and small bushes to 17,000 ft.—being nearly 1300 ft. higher than the limit of perennial snow under the equator.

Minerals.—Tibet is extremely rich in minerals, especially in gold, which is found in lumps, veins, and in the sands of the rivers. Gold, silver, mercury, native cinnabar, iron, and rock-salt, are obtained from mines; but the want of fuel is an insuperable obstacle to their successful operation—coal being unknown, and there being little or no wood in the country. The chief gold-field of Tibet is that of Shok-Jalung (lat. 32° 24′, lon. 81° 37′), at the height of 16,330 feet above the sea, where the yield of gold is very large. The gold-fields generally run close to the northern water-parting of the Brahmaputra. Lapis-lazuli, turquoises, borax, and nitre, are found in great abundance.

Botany.—The vegetation is extremely scanty. Forest-trees are rare, but the cedar is found on the mountains, and several orchard-fruits in the valley of the Mouran, including grapes, figs, pomegranates, peaches, apples, apricots, and nuts. Many of the grasses common in Europe are found; but very little wheat, and less rice, is cultivated. Buckwheat is raised successfully, but grey or black barley is the principal grain cultivated. The principal articles of diet are China tea stewed with butter, barley cakes, butter-milk, and boiled meat.

Zoology.—Among the animals may be mentioned the yak or grunting ox and the musk deer (both of which appear to be aboriginal to the country), wild-ox, buffalo, goat, antelope, kiang or wild-ass,

wild-cat, tiger, leopard, lynx, gyaki or royal dog, bear, badger, and the argal with horns of 100 lb. weight. All our domestic animals are known in Tibet; but the one most used as a beast of burden is the bhoral, a large sheep covered with long hair. Fish are abundant in the rivers, but are prohibited from being eaten by the Buddhist religion.

Ethnography.—The Tibetans belong to the Mongolian race, and, like the Mongols Proper, were at first divided into many independent tribes, who followed a nomadic life. The great bulk of the population continue to follow their flocks from place to place, but a considerable fraction of them reside in towns, some of which are very large. The practice of polyandry is common—one woman becoming the wife of all the brothers in a family.

Their *Language*, sometimes called Tibetan, and sometimes Bhotanta—because spoken also in Bhotan—belongs to the monosyllabic family, though not a few polysyllables exist in it. It bears a great resemblance to the Chinese—some of its roots, and nearly all the derivatives, being clearly traceable to that language. The alphabet, however, is phonetic, reads from left to right, and is without doubt borrowed from the Sanscrit. *Buddhism* was introduced into Tibet about A.D. 367, became the dominant religion in 905, and this country has for ages been the home and headquarters of the Buddhist faith. Under the name of *Lamaism* it still exists here in its primitive purity; while the Grand Lama or Supreme Pontiff is regarded as an incarnation of Buddha. He is a temporal as well as a spiritual sovereign; the country abounds with temples, and 80,000 lamas or priests are maintained by the state. The numerous rites and ceremonies are said to bear a most remarkable resemblance to those of the Romish Church.

Commerce, &c.—Tibet was conquered by Zenghis-Khan in A.D. 1206, and gradually subdued by and annexed to China from 1255 to 1720. It is now ruled by viceroys from Peking, in conjunction with the ecclesiastical heads of the country. Manufactures of woollens, sacking, and other woven fabrics, are pretty general, and much cloth is sent from Lhasa into China. The traffic through Tibet is extensive, and is chiefly carried on with China on the one hand, and Nepal, Bhotan, and Eastern Turkestan on the other. The Indian Government, however, have recently made vigorous efforts to open up a market for British and Indian goods. The jealousy of the Chinese Government is at present the chief barrier to commerce. The principal Exports are gold, silver, salt, borax, shawl wool; while the Imports chiefly consist of tea, brocades, and porcelain from China; horses and camels from Eastern Turkestan; dried fruits, shawls, gamboge, and timber from Kashmir; and Indian piece-goods, sugar, tobacco, indigo, rice, spices, &c., from Bengal, Bhotan, and Nepal.

Table of Rivers and Towns.—The following Table exhibits the River-System of China and the east part of Mongolia. All the basins incline to the Pacific Ocean :—

Rivers.	*Towns.*
Co. of Quang-tung,	Lien-chow.
Choo-kiang,	Victoria, Macao, CANTON, Chow-king, Sin-chow.
Quei, *l*	Quei-ling.
Ngo-yu,	Chin-ngan.
Han-kiang,	Chow-chow.
Fo-kien Channel,	Amoy, Chang-chow, n.
Min,	Foo-chow, Yen-ping.
Co. of Che-kiang,	Wan-chow, n., Tai-chow, Ning-po.
Tsien-long,	Hang-chow.
Woo-sung,	Shanghae, Soo-choo, Kia-hing.
Yang-tse,	NANKING, Tai-ping, Chee-chow, NGAN-KING, Han-kow Wo-CHANG, Quei-chow, Sioo-choo, Likiang, Bathan.
Kan,	NAN-CHANG.
Po,	Kin-te-ching.
Han, *l*	Siang-yang, Han-chang.
Heng,	Yo-chow, CHANG-SHA, Hong-chow, Yong-chow.
Yuen,	Chin-yuen, n., Ping-yoo, n.
Oo,	Se-nan, QUEI-YANG, n., Ching-hiang.
Kialing, *l*	Poo-kiang.
Min, *l*	Sioo-choo, CHING-TOO.
Tien-chi,	YUN-NAN.
Hoang-ho,	Hwai-ngan, Quei-te, n., KAI-FONG, Hoai-king, LAN-CHOW.
Wei-ho,	SI-NGAN, Koong-chang, n.
Fuen-ho, *l*	Pin-yang, Fuen-chow, TAI-YUEN.
G. of Pe-chi-li,	Teng-chow.
Ta-tsin,	TSI-NAN, Tong-chang, n.
Eu-ho,	Tien-tsin.
Pei-ho, *l*	PEKING, n.
Chan-tou,	*Zehol*, Dolonnor.
Leao-ho,	MOUKDEN.
Kiang-ho,	KING-KI-TAO.
E. Co. Corea,	Ping-hai.
Amoor and Shilka,	NIKOLAIEVSK, Saghalien-Ula, BLAGOVESCHENSK, Nertchinsk.
Sungari,	KIRIN-ULA, Mergen.
Argun,	*Fort Argunsk.*
Ingoda, *l*	Chita.

TURKESTAN.

TURKESTAN, or the country of the Turks, comprises a very wide extent of territory in Central Asia, reaching from the Caspian on the west, to the frontiers of China Proper on the east, and from the Hindu-Kush and Kuen-lun mountains on the south to the 47th degree of latitude on the north. It thus comprehends three main divisions which are politically distinct —viz., Eastern Turkestan or Kashgaria, now independent of China; second, Western Turkestan, formerly known as Independent Tartary, but now in a great measure under the influence of Russia; and third, Russian Turkestan, now forming a part of Siberia. The entire area may be loosely estimated at 1,000,000 sq. m., and the population at 13,500,000. Situated almost in the centre of the Asiatic continent, it consists of—1. The southern portion of the vast northern plain, a large part of which lies below the level of the ocean, and known, therefore, as the basin of continental streams. This plain contains the Caspian Sea (83 ft. below the level of the Black Sea), the Sea of Aral, Lake Balkash, and many other lakes and marshes. The rest of

this plain is, for the most part, a great sandy desert, only broken by the fertile basins of the Amoo and Sir Daria; 2. The other portion of Turkestan forms the western part of the mighty plateau of High Asia, including the plateau of Pamir, supporting the great mountain-knot known as the Bolor Tagh, separating Eastern from Western Turkestan, and forming the nucleus from which ramify many of the loftiest mountain-ranges on the surface of the globe. The inhabitants, who are known as Tartars or Turks, are of the Turanian stock, and closely allied to the Mongol race, one of the main subdivisions of the human family. They are known in antiquity as Scythians. During the decline of the Roman Empire these tribes began to seek more fertile regions, and the first who reached the frontier of Italy were the Huns under Attila, "the scourge of God." In later times, Zenghis Khan, Kublai Khan, and Tamerlane, reigned over Turkestan, and overran all the surrounding countries, including China, Persia, and India.

EASTERN TURKESTAN OR KASHGARIA
(FORMERLY CHINESE TARTARY).

Boundaries.—N., Dzungaria and Russian Turkestan, from which it is separated by the Thian Shan mountains; W., the Bolor Tagh, separating it from Western Turkestan; S., the Kuen-lun mountains, which separate it from Tibet; and E., China Proper. Lat. 36° 10′—43° 34′ N. lon.; 72° 30′—94° E. Kashgar, the cap., on the central parallel, is in the same latitude as Toledo in Spain, Erzrum, Bokhâra, Peking, San Francisco, and Baltimore.

Area and Population.—The area is supposed to amount to 270,000 sq. m., or three times the size of Great Britain, and the population to about 3,000,000, or equal to that of Scotland.

Surface.—In shape it resembles a huge bay of the ocean, with its mouth turned to the east, and shut in on its other three sides by gigantic mountain-ranges. Between these the surface forms a plateau of from 4000 to 5000 ft. in elevation, while a broad desert, thirty days' journey in extent, occupies its mouth, and separates it from China, of which it was till recently a possession. The most arid part of this desert lies E. of 88° lon. It is generally known as the Han-hai, or "Dry Sea," and forms the western part of the great desert of Gobi. A crescent-shaped region, lying to the W. of the Han-hai, is watered by the Yarkand and its tributaries, and is highly fertile. The Thian Shan, on the north, attain in Tengri-Tagh an elevation of 21,000 ft.; the Karakorum mountains, in Dapsang Peak, an elevation of 28,278 ft. Eleven high passes have to be crossed in travelling from India to Turkestan by the usual trade route, and of

these only two are lower than the summit of Mont Blanc. The Muztâgh Pass, between Turkestan and Kashmir, has the stupendous elevation of 18,435 ft.

Political Divisions.—For a century before 1864 this country was a dependency of China, but in that year a successful insurrection was made by the Mussulman inhabitants under Yakoob Beg, and this portion of Turkestan is now entirely independent.

Towns.—Kashgar 16 (Kashgar, *affl.* Yarkand), Yarkand 120 (Yarkand), Iltchi or Khotan 40 (Khotan), Khamil (Desert), Kutché, Aksu 20 (*affls.* Yarkand), Turfan 150 m. W. Khamil.

Descriptive Notes.—**Kashgar**, the political cap. of the country, was a city of great importance before the Christian era. Situated in the angle formed by the Thian Shan and Bolor Tagh, it is the centre of all the commercial routes which render this country so important. It has manufactures in cotton goods, and articles in gold and jasper. **Yarkand**, the commercial cap. of E. Turkestan, is a large and populous city, containing 120,000 inhabitants, 60 colleges, 160 mosques, and 12 caravanseries, which are crowded with merchants from every country in Asia. **Khotan**, a large city celebrated for its carpets, leather, silk fabrics, paper, and articles in jasper. **Khamil**, in a fertile district at the foot of the Thian Shan mountains, is the centre of a large trade. **Aksu**, formerly the military headquarters of the Chinese viceroy, is a large city, much resorted to by caravans from all parts of Asia.

Rivers and Lakes.—The only great river of the country is the Yarkand or Tarim, which rises in the plateau of Pamir, and after a course of 1500 m. discharges its waters into Lake Lop-nor, in the western side of the desert of Gobi. It has numerous affluents (see p. 428).

Climate.—The climate of this inland region is what is termed *excessive*, the cold in winter and the heat in summer being usually very great; but data are wanting to describe it with accuracy. In the depth of winter, at the source of the Yarkand river, at an elevation of 15,656 ft., the temperature at eight o'clock in the morning (December 1869) was 18° below zero. Very little rain falls in any part of Eastern Turkestan, as the clouds laden with rain are almost entirely deprived of their moisture in crossing the different ranges of the Himalaya, where, in some places, the annual rain-fall amounts to 300 inches.

Natural Products.—The mineral wealth of the country is known to embrace gold, found in the Thian-Shan mountains, where also sulphur, sal-ammoniac, asbestos, and saltpetre are obtained. Copper and iron are wrought in several places; jasper, agates, and other gems are abundant; and especially jade-stone, which is much prized as an article of commerce. Diamonds are said to occur in the mountains.

The southern slopes of the Thian Shan are clothed with forests, but wood is almost unknown elsewhere. The western part of the country is highly cultivated, producing wheat, barley, Indian-corn, lucerne, cotton, flax, and hemp. Fruits of all kinds grow to perfection, as apples, pears, apricots, peaches, walnuts, melons, and even grapes, the vines

being buried in winter on account of the frost. On the mountain-sides roam large herds of shawl-goats, sheep, yaks, cows, camels, and horses.

Ethnography.—The inhabitants are a mongrel race, consisting of Tartars, Persians, and an admixture of Chinese. They nearly all profess the Mohammedan faith, but there are a few Christians and Jews. The language is Turkish, and almost identical with that spoken in Constantinople.

Commerce and Industry.—Hitherto the commerce of Eastern Turkestan has been principally with China, from which it imported tea, silver, and porcelain: from Siberia it receives broad-cloth, brocades, and bullion; from Kashmir, shawls, white piece-goods, and leather; from Badakshan, slaves and gems; and from Western Turkestan, carpets. Our Indian Government are taking vigorous steps to establish trade with the country, and Yakoob Beg, the present ruler, has expressed his earnest desire to co-operate. As the consumption of tea is enormous, we are likely to obtain here an extensive market for our Assam tea and other Indian products. Hitherto the tea has been brought down from the interior of China to Shanghae and Canton, and there shipped to India. From Bombay it went to Karâchi, and from thence up the Indus into the Panjab, and by the Khyber Pass into Kabul, and from Kabul to Kokand, thence S.E. to Kashgar, and from Kashgar it was disseminated through Central Asia. But by the new land-routes now proposed our Assam tea can be conveyed through Leh in Kashmir, through the Changchenmo valley to Iltchi (the cap. of Khotan), to Kashgar and Yarkand. Thus, instead of making a circuit of 5000 m., the distance will not exceed 750 m. The manufactures of the country are mostly confined to silk and fine woollen goods.

WESTERN TURKESTAN.

Boundaries.—N., Siberia; W., the Caspian; S., Persia, Afghanistan, and the Panjab; E., Kashmir and Eastern Turkestan or Kashgaria, from the latter of which it is separated by the Bolor Tagh mountains.

Owing to the recent annexations to Russia and the tottering condition of much of the remainder, the lat. and lon. of Western Turkestan remains for the present undefined; but we may regard it as extending from 35° to 44° N., and from 55° to 74° E. Bokhâra, near the centre, is on the same parallel as Madrid, Naples, Constantinople, Kashgar, Peking, and New York.

Area and Population.—Owing to the daily encroachments of Russia, it is impossible to give the area or population of these feudatory states; but the former may be stated (in 1875) at 380,000 sq. m., and the latter at 3,000,000.

Surface.—The surface consists for the most part of an immense plain, which from all sides slopes towards the Caspian and Sea of Aral, and forms a continuation of the great Siberian plain. A large

portion of this plain, including the Caspian, is considerably beneath the level of the Black Sea, and probably formed the bed of the ocean in a remote age. The S.E. part of the country consists of a part of the lofty plateau of Pamir, 15,600 ft. high. Here are many well-watered and highly-fertile valleys, but in general the country is extremely sterile.

Political Divisions.—Western Turkestan consists of a number of semi-independent states, or *khanats*, as they are called, the principal of which are the following:—

KAFIRISTAN.—Chittral 4 (Kamah, *affl.* Kabûl), Khawak (Punjsheer), Farajghan (Tagu).

KUNDUZ.—Kundûz 5 (Bunghee, *affl.* Amoor), Badakshan (Badakshan).

BOKHARA.—Bokhâra 160 (Kohik), Kurahee 10 (Kurahee), Carjooee 5, Tirmez (Amoo), Uratepeh 10 (Sagd).

KHOKAND.—Khokand 100, Marghilan, n., Usch (Syr Daria).

KHIVA or KHARESM.—Khiva 12, n., Urgenj 3, Kungrad 10 (Amoo), Merv 3 (Muhrghab).

MEIMANA.—Meimana (*affl.* Amoo).

Descriptive Notes.—**Chittral**, also called Kashkaro, is the chief place of commerce in Kafiristan, or "land of the Kafirs or infidels," the name given to this region by their Mohammedan neighbours, who hold them in the greatest abhorrence. The inhabitants are a remarkable race, greatly resembling the Caucasian in their features, language, and manners; and claim to be brothers of the Feringhi, or Europeans. They live in a rude and primitive state, but exhibit great skill in working metals, and in other arts, and have for ages maintained their independence, though their small territory has been repeatedly overrun by the Mohammedan nations who surround them. **Khawak**, a celebrated fort and mountain-pass, the most easterly and the best known across the Hindu-Kush. By it Tamerlane entered Hindustan, A.D. 1399. **Kunduz**, a wretched place, consisting of about 600 mud hovels. **Badakshan** or Fyzabad, on an affluent of the Amoo, has acquired great celebrity for its valuable mines of ruby and lapis-lazuli. It was once the cap. of an independent sovereignty, and a place of great importance; but in 1832 great part of it was destroyed by an earthquake, and scarcely a vestige of it now remains. The inhabitants are distinguished for their hospitality, and it is said that bread has never been sold in the country. **Bokhara** is a celebrated city, and the only really populous one in the khanat. It has been long famous as a seat of Mohammedan learning, has 360 mosques and as many colleges and schools, with 10,000 students. It is a place of very extensive commerce, and merchants from all parts of Asia assemble here. Water is scarce in summer, and of so bad a quality that it gives rise to the terrible disease occasioned by the guinea-worm, which burrows in the flesh of the human body, producing intense pain. **Khokand** (anc. Ferghana) has manufactures of silk and cotton tissues, and an active trade in cattle. The khanat is the country of the celebrated Sultan Baber, the founder of the Mogul empire in India, A.D. 1525. Some miles S.E. of the cap. is **Marghilan**, the ancient cap., containing some good buildings and remains of antiquity. **Khiva**, a miserable-looking place, built of mud and extremely filthy, is the greatest slave-market in Turke-

stan. **Merv**, formerly one of the four imperial cities of Khorassan, and the cap. of the Persian sultans of the Seljukian dynasty, is now in ruins.

Lakes.—See under "Asia," par. 13.

Climate.—The climate is necessarily very diversified, since the elevation ranges from that of the Caspian, which is 83 ft. below the level of the Black Sea, to 18,000 ft. above it. That of Bokhâra, in the south, is, however, described as dry, pleasant, and salubrious, but very cold in winter, when the Amoo or Oxus is covered with so deep a coating of ice that travellers can easily pass over it. The sky is usually very clear, and of a bright azure colour. Snow lies about three months in the year, and violent tornadoes frequently follow the summer heats, which in June rise to upwards of 100° during the day, and fall to 60° at night. "In general, the seasons in this country may be described thus: spring, sudden and fleeting; summer, dry and burning; autumn, rainy, gloomy, and short; winter, long, dry, and constantly cold."

Minerals.—Gold in the sands of the Oxus; coal, copper, iron in Khokand, where also rich silver mines occur in the mountains; salt-deposits numerous; sal-ammoniac in its native state; and mines of rubies and lapis-lazuli.

Botany and Agriculture.—The indigenous plants appear to be few in number; timber is exceedingly scarce; fruits are excellent and abundant, especially in Bokhâra, where the vine is successfully cultivated. The principal cultivated plants are rice, wheat, barley, millet, maize, tobacco, hemp, rhubarb. Tillage is almost confined to the banks of the rivers. Mulberry-trees are extensively reared in the S., and silk, together with cotton, is produced in great abundance along the banks of the Oxus.

Zoology.—Among the mammiferous animals in the steppes, the Rodentia, especially the mouse, are the most numerous; the buffalo, wild horse, saiga antelope, yak, rass or Pamir sheep, leopards, wolves, foxes, hares, goats, in Bokhâra, Khiva, and Kunduz; bats, tortoises, and lizards in the deserts; scorpions are common, and locusts sometimes infest the country; eagles and falcons are met with, and plovers, wild-pigeon, and waterfowl abound; but there are no singing-birds, and game of all kinds is scarce. Fish is not abundant; those taken in the Oxus are similar to those of other Asiatic rivers, with the exception of an enormous species of dog-fish, called *lukha*, which has no scales, and which sometimes attains the weight of 600 lb. The species found in the Sea of Aral are the same as those in the Caspian, whose fauna is peculiar, but mixed with Black Sea species. (See pp. 294, 314.)

Ethnography.—Turkestan means "land of the Turks," this country having been the headquarters of the Turkish race from time immemorial. The Turks are Mongols, their language Turanian (pp. 86, 314, 422). The northern and south-western parts are inhabited by nomadic tribes (Kirghiz, Turcomans, Uzbecks). Among the settled tribes the most numerous are the Tadjiks, who are supposed

to be of Persian or Arabian origin, and speak pure Persian; their religion is Mohammedanism, here divided, as elsewhere, into two sects, Sunnites and Shias; but the Shias are compelled to hide their belief, as they are nowhere tolerated, and are treated as Kafirs or unbelievers, and sold as slaves. Soofeeism or free-thinking also prevails among them. The Kafirs, in Kafiristan, are Caucasians, and use a Medo-Persian tongue.

Commerce.—The commerce of the country, especially of Khiva and Bokhâra, is considerable—their territories being favourably situated in regard to Russia, Persia, Afghanistan, India, and the Chinese empire—and is conducted by means of caravans. Bokhâra alone employs upwards of 3000 camels in the trade with Kabul, Herat, and Kashmir. The manufactures are few and unimportant, consisting chiefly of silk and cotton stuffs, carpets and shagreen, made in the towns, with sabres, knives, and other weapons. The principal Exports are cotton-cloth, wool, fruits, hides, sheep-skins, dyes, and silk. Imports comprise muslins, brocades, sugar, shawls, white cloth, opium, and cutlery, from the south; British and other European manufactured goods through Russia; porcelain, tea, musk, rhubarb, from China; and wool from Tibet. Trade is principally carried on by means of barter. The slave traffic is extensive, the Chittral boys and girls being the most prized, owing to their superior beauty, docility, and fidelity; while the Kafirs are most untractable and revengeful.

Government.—The various governments are despotic, but the khans are obliged to rule in accordance with the principles of the Koran: they are also influenced by the priests and by public opinion. The military force fluctuates in the various states; in Bokhâra it does not exceed 4000 men of all arms, one-third of whom only are fully armed. Very recently Russia has made serious encroachments on Western Turkestan, especially on the khanats of Khiva, Bokhâra, and Khokand, which have now in a large measure lost their independence.

River System of Central Asia, or Basin of Continental Streams.—A portion of this immense basin—viz., the minor basins of the Ural, Volga, Kuma, Terek, Kuba, and Kur, all lying W. of the Caspian, have been treated of under "European Russia" (p. 328). The following table embraces the N. and centre of Persia, the N. and W. of Afghanistan, and the whole of Turkestan. Many of the rivers flow into lakes which have no outlet, while others are lost in the sands of the desert.

Rivers.	*Towns.*
N. Co. of Persia,	Resht, Lahijan, Amol, n., Balfrush, Sarez, Astrabad.
Kizil Ouzan (Caspian),	Lahijan, Kasbin, n.
Zenjan,	Zenjan.
Attruck,	Kabushan.
Aigi (L. Urumiah),	Tabriz, Urumiah, Maragah, n., Dilman.
Amu Daria (L. Aral),	*Urgenj*, Kungrad, Khiva, n., Kunduz, n., *Tirmez*, Badakshan, n.
Muhrghab (lost),	*Merv.*
Heri-rood,	Herat, *Meshed.*
Kohik (lost),	Bokhara, Samarcand.
Kurshee (lost),	Kurshee.
Adersiah, *l.*	Balkh.

Rivers.	*Towns.*
Khulum, *l.*.....	Khulum or Tash-Kurghan.
Syr Daria (L. Aral),	*Fort Aralsk, Otrar,* TURKESTAN, n., *Tunkat,* Tashkend, Khojend, KOKAND, Marghilan, n., Usch.
Ili (L. Balkash),	ILI or GULDJA.
Kobdo (L. Ike Aral),	Kobdo.
Lake Barkol,.....	*Khamil,* n.
Yarkand (Lop Nor),	Yarkand.
Chayar, *l.*.....	Chayar, Koulché.
Khotan, ...	Iltchi or Khotan.

Rivers.	*Towns.*
Aksu, *l.*.....	Aksu.
Kashgar, *l.*....	KASHGAR.
Helmund (L. Hamun),	DUSHAK.
Turnak, *l.*.....	*Kelat i Ghiljis.*
Urghendab,.	KANDAHAR.
Haroot,.....	Subzawur.
Ghuzni (L. Abis-tada),	Ghuzni.
Kurab,.....	*Murghab.*
Rocknabad (lost),	SHIRAZ.
Zendarood (lost),	Ispahan.
Kara-su (lost),	Hamadan, n.
Kehveh (lost),	TEHERAN, n.

SIBERIA AND CENTRAL ASIA.

Boundaries.—N., the Arctic Ocean; W., European Russia, from which it is separated by the Ural Mountains, Ural River, and the Caspian; S., Western Turkestan, the Thian Shan Mountains, and Mongolia; E., the Pacific Ocean.

Owing to Russia's recent aggressions in Western Turkestan, the southern frontier is now pushed forward beyond Samarcand to lat. 39°, while Cape Severo, in the extreme north, is in lat. 78° 12′. The lon. extends from Novo Patrovsk, on the Caspian (lon. 50° 16′ E.), to East Cape, in Behring Strait (lon. 169° W.) This portion of the empire extends, therefore, over 39° of lat. and nearly 141° of lon. While its southern boundary is on the same parallel as Madrid, Naples, Constantinople, Bokhara, Peking, and New York, its northern limit is in the same lat. as the Parry Islands and the southern point of Spitzbergen.

Area.—The area of Siberia and Central Asia is now estimated at 6,444,940 sq. m., and the population (in 1873) at 6,341,000, or one inhabitant to each sq. m. One half larger than the Chinese empire, it is nearly twice as large as the whole continent of Europe; while the population does not much exceed that of Ireland.

Surface.—The entire west and north consists of a vast lowland plain, gently sloping towards the Arctic Ocean and the Sea of Aral, and embracing immense desert *steppes,* full of salt marshes, and destitute of timber. The principal steppes are the Kirghiz steppe, extending from the Caspian to Lake Balkash; the steppe of Ishim, along the head-waters of the Tobol and Irtish; and the steppe of Barabinska, farther to the N.E., between the Irtish and Obi. Throughout the whole of this immense region, the rivers in winter flow underneath a thick coating of ice. Owing to their slight fall they readily overflow their banks, and inundate extensive portions of their basins. The Arctic Ocean being almost constantly ice-bound, the rivers that find their way to it are almost useless as

channels of commerce. East of Lake Balkash, the country becomes more mountainous and varied, and the southern frontier is considerably within the limits of the plateau of High Asia. The Thian Shan mountains form the boundary between Russia and Eastern Turkestan, and it is understood that there is no intention of extending the empire farther south in this direction. Still farther east, the boundary is formed by the Altaian and Sayansk mountains, and the river Amoor, the basin of which is highly fertile, as is also the basin of the Syr Daria, in Turkestan. In other parts, though the soil is fertile in many places, the extreme severity of the climate will ever prevent successful cultivation. (See under "Asia," p. 347.)

Political Divisions.—The Russian government has divided Siberia into two main sections—viz., Western and Eastern Siberia, the respective capitals of which are Tobolsk and Irkutsk. These are now subdivided into five governments and six territories. The government of Turkestan, recently seized from the khans of Western Turkestan, embraces the two provinces of Syr Daria (cap. Turkestan) and Semirichensk (cap. Vernoè). This new government embraces 143,000 sq. m. along the banks of the Syr Daria, with a pop. of about 1,000,000.

Western Siberia.

Tobolsk.—Tobolsk 18, Omsk 19 (Irtiah), Tiumen 12 n. (Turà), Kurgan (Tobol), Petropaulovski 9 (Ishim).

Tomsk.—Tomsk 21 (Tom), Barnaul 11, Bijisk 4 (Obi).

Kirghiz Ter.—Novo Alexandrovsk (Caspian).

Semipolatinsk Ter.—Semipolatinsk 7 (Irtish).

Turkestan.—Turkestan 10, n., Otrar, Tashkend 90, n., Khojend 50 n. (Syr Daria), Samarcand 25 (Kohik), Fort Aralsk (Sea of Aral), Vernoè, n. (Ili).

Eastern Siberia.

Yeniseisk.—Krasnoiarsk 10, Yeniseisk 6 (Yenisei).

Irkutsk.—Irkutsk 28 (Angara), Kirensk 2 (Lena).

Yakutsk Ter.—Yakutsk 6, Olekminsk (Lena), Veluisk (Velui).

Trans-Baikal Ter.—Chita (Ingoda), Nertchinsk 5 (Shilka), Udinsk 3, Selenginsk 3, Kiakhta 5, n. (Selenga).

Amoorskaya Ter.—Blagoveschensk (Amoor).

Primorsk Ter.—Nikolaievsk n. (Amoor), Okhotsk (Sea of Okhotsk), Petropaulovski 1 (E. coast of Kamtchatka).

Descriptive Notes.—**Tobolsk**, the cap. of Western Siberia and the chief seat of its commerce (which consists chiefly of metallic ores, fish, and fur, given in exchange for the manufactured goods of Europe and China), contains a monument to Yermak, the founder of Russian influence in Siberia. **Omsk** maintains a considerable trade with the wandering Kirghiz in furs, brandy, and tobacco. **Tiumen**, an entrepôt for the commerce between Russia and Central Asia, contains upwards of 100 factories for the manufacture of Russia leather and woollen fabrics. **Tomsk** and

Barnaul derive their importance from their proximity to the mining district of the Altai. **Semipolatinsk** is the seat of a considerable trade with the adjacent part of the Chinese empire. **Otrar** is noted as the place where the celebrated Tamerlane died (A.D. 1405) when on his way to conquer China. **Tashkend**, by far the most populous town in Siberia, forms the key of the valley of the Syr Daria. **Khojend**, a large town actively engaged in the manufacture of cotton fabrics, carries on an extensive trade with Bokhara. **Samarcand**, at one time one of the most famous of Asiatic cities, and the capital of one of the largest empires that ever existed—viz., that of Tamerlane, whose tomb is enclosed within its walls. It is the Holy City of the Mohammedans of Central Asia. **Fort Aralsk**; here the Russians maintain a small fleet of war vessels, and a number of flat-bottomed boats for ascending the almost unnavigable Syr Daria. **Krasnoiarsk** contains a fine collection of Siberian antiquities; is important as lying on the route from Tobolsk to Irkutsk. **Irkutsk**, a considerable town on the Angara, and the most populous place in Eastern Siberia, is the great emporium (next to Kiakhta) of the Russian commerce with China. It maintains telegraphic communication with St Petersburg, and is the see of an archbishop whose authority extends over 120° of longitude! **Yakutsk**, the main depôt for the fur trade of Eastern Siberia, carries on a traffic in ivory obtained from the walrus of the Arctic Ocean and from the fossil remains of the mammoth and rhinoceros found embedded in the frozen soil of the northern shores. **Nertchinsk**, a celebrated mining town in the Yablonoi Mountains. **Kiakhta**, the grand mart of exchange between Russia and China, and the residence of numerous merchants. **Okhotsk**, the principal station of the Russo-American fur company. **Petropaulovski**, the headquarters of the Russian fleet of the Pacific, was successfully bombarded by the Anglo-French fleet in 1854.

Capes, Islands, Seas, Bays, Gulfs, and Lakes.—See under "Asia."

Climate.—The climate of Eastern and Northern Siberia is intensely cold during winter, which lasts nine months, but very warm during the brief summer. The lower basin of the Lena is the coldest known region on the globe. The mean temperature for winter at Yakutsk, in this basin, and almost exactly in the centre of Siberia, is 36° 7′ below zero; while that of July, the hottest month, is 58° 7′—showing a difference of 94° of temperature between summer and winter. Here mercury remains frozen from two to three months in the year; breathing becomes difficult, and the reindeer hides himself in the depths of the forest and stands motionless. The heat of the summer penetrates the soil only to a depth of about 3 ft., beneath which it remains permanently frozen. Erman found, by sinking a well, that the frozen stratum extended to the depth of 400 ft. at Yakutsk, but in other places it is much less. The rivers are covered for many months with a thick coating of ice; and the country being almost a dead level, and the upper courses of the rivers melting earlier in summer than the lower, much of their lower basins becomes inundated. The climate of Russian Turkestan, though exceedingly variable, is not nearly so extreme. The Syr Daria is covered with ice for *only five* months in the year—viz., from November to March; while in May, June, and also in September, it is flooded by the melting of the snows on the Thian Shan mountains. At Fort Perovski, in the province of Syr Daria, the summer is dry and sultry, rain falling only

once or twice during the whole summer, and the temperature reaching 40° Reaumur or 122° Fah.; in winter at the same place snow lies on the ground three months in the year.

Minerals.—Siberia yields to no country in the world for the riches and variety of its mineral productions. Coal alone is deficient, though recently it has been discovered in the mountains near Khojend, in Russian Turkestan.

There are three extensive mining districts—viz., 1. Those of the Urals, on the E. declivity of which they occupy an area of about 40 m. wide, and yield great quantities of iron, gold, and copper, with some silver and platinum. 2. The mining district of Barnaul in Tomsk, yielding auriferous silver and copper, but less lead. The mines here lie mostly in the Altai Mountains, which are also rich in cornelian, onyx, topaz, amethyst, diamonds, and other gems. 3. The district of Nertchinsk, rich in silver, gold, copper, lead, quicksilver, tin, zinc, and iron. Here are also celebrated mines of emerald and topaz, found generally in connection with tin. The total produce of gold from Siberia in 1868 was estimated at £3,000,000 stg. The other principal minerals are salt, found in natural crystals on the banks of some lakes; jasper and porphyry of great beauty, in the Altai Mountains; lapis-lazuli, near Lake Baikal; diamonds, found occasionally on the eastern slope of the Urals; and malachite, containing copper and mica, in the form of large plates, extensively used as a substitute for window-glass.

Botany.—Enormous forests of coniferous and other trees extend from the Altai Mountains to the Polar Circle; a few bushes, willows, and saline plants form the principal vegetation of the *steppes* in the W.; while in the dreary region of the *tundras*, N. of the Arctic Circle, are found only the dwarf willow, mosses, and lichens. (See under "Asia," p. 347.)

The principal cultivated plants are rye, barley, and oats, which rarely ripen beyond the lat. of 60°. Wheat is grown in some places in the basins of the Irtish, Yenisei, and Syr Daria, and buckwheat and millet in various localities. Flax, hemp, tobacco, turnips, pease, beans, potatoes, cabbage, onions, radishes, mustard, and even cucumbers and pumpkins, are raised in considerable quantities. The cotton plant is also cultivated in Russian Turkestan as far north as Vernoè, but fruit-trees do not succeed anywhere except in the lower basin of the Amoor.

Zoology.—Siberia is also very rich in its wild animals, especially the fur-bearing species, as the sable, ermine, marmot, marten, beaver, squirrel, and fox, the skins of which form an important article of commerce. Other wild animals are the white and black bear, the reindeer, elk, wolf, and glutton, the striped tiger, wild boar, saijak or Scythian antelope, and wild horse, in Russian Turkestan; here also the common eagle, ger-falcon, and other birds of prey are found, while millions of gallinaceous and aquatic birds frequent the woods and lakes. Among reptiles may be mentioned scorpions, tarantulæ, and phalangi. During the summer, swarms of locusts, gadflies, gnats, and thrips infest the region of the Syr Daria. The rivers swarm with fish, while the Caspian abounds in sturgeons, salmon, sterlets, and seals.

Ethnography.—About one-half of the population of Siberia con-

sists of exiles and convicts from European Russia, who, to the number of about 10,000 annually, are sent hither either to work in the mines or to colonise the country. The remainder are Turanians.

The Samoiedes in North Siberia, between the Ural Mountains and the Lena, are in all probability the earliest inhabitants of Northern Asia. From an extensive list of Samoiede words, collected by Pallas and Klaproth, it appears that their language more closely approximates to the Finnish than to any other known tongue. They are an extremely ignorant and degraded race; their religion is Shamanism, one of the grossest forms of idolatry, and they depend for their precarious subsistence on hunting and fishing. The Yukagirs, Koriaks, Tchukchees, and Kamtchadales occupy the remainder of Northern Siberia, from the Lena to the Pacific. They lead a wandering life, and subsist by fishing and the chase, though many of them possess large flocks of reindeer. In winter they live in huts below the level of the ground, with only a single aperture for the admission of light and air; while their summer residences consist of rude huts formed of the trunks of trees, with a covering of bark. Buddhism and Paganism are the prevalent forms of belief, though a few profess a corrupted form of Christianity. South of these, and occupying the immense region of South-eastern Siberia, between the Upper Yenisei and the Sea of Okhotsk, are found the Tunguzes, who are closely allied in origin to the Mantchoos. Their language differs considerably from that of the Mantchoos, having a considerable admixture of Mongolian terms, and being extremely rude and barbarous. The Tunguzes are fire-worshippers, but a few of them have been baptised. South-western Siberia, between the Yenisei and the Ural Mountains, is mainly occupied by the Ostiaks and Wogulians, two nations of Turkish origin, professing the Mohammedan religion, speaking dialects closely allied to each other, and belonging to the Finnish family of tongues. The Buriats, a Mongolian tribe, dwell chiefly on both sides of Lake Baikal, and are the most numerous of all the Siberian tribes. They are said to number about 150,000 individuals; their dialect is closely allied to the Calmuck, and is the same as that spoken by the Khalka tribes in Eastern Mongolia. A tribe of Calmuck Tartars peoples the Altai Mountains, immediately to the W. of the Buriats. The province Turkestan, and the steppes around the Sea of Aral, are peopled by hordes of wandering Kirghiz, a Tartar race, who speak the Turkish language and profess the Mohammedan religion.

Manufactures and Commerce.—The manufactures of Siberia are unimportant, except in the large towns in the valley of the Syr Daria, where the silk-worm is reared and silk and cotton cloths are woven. The mining districts of the Ural, Altai, and Yablonoi give employment to a large fraction of the community. Tobolsk has tanneries and some manufactures of soap, and at Irkutsk is an imperial factory of woollens for the clothing of the troops. The commerce is of considerable extent, consisting chiefly of the exportation of the produce of the mines, together with furs, skins, cattle, fish, mammoth bones, morse teeth, and caviare, in exchange for which tea, silk, porcelain, paper, and rhubarb are imported from China. China is Russia's best customer, while Siberia is the most important link in the through traffic. Immense caravans constantly travel from Moscow to China, the ordinary route being the Volga and Kama to Perm, thence by the Jura and Irtish to Omsk, then

through Tomsk, Irkutsk, and Lake Baikal to Kiakhta on the Mongolian frontier, being a distance of 4400 m., and occupying about 100 days.

Transcaucasia.—See under "Russia," p. 322.

River-System of Siberia.—The following table, in continuation of that given under Western Turkestan, embraces the rivers and towns of Northern Asia, from the Amoor to the Oby :—

Rivers.	*Towns.*
Amoor,	(See under "Tibet.")
Sea of Okhotsk,	Ok-Okhotsk.
R. Co. of Kamtchatka,	Petropaulovski.
Lena,	*Jigansk*, YAKUTSK, *Olekminsk*, *Vitimsk*.
Viloui,	*Veluisk*.
Yenisei,	Yeniseisk, KRASNOIARSK.
Angara and L. Baikal,	*Balagansk*, IRKUTSK.
Selenga, *l*	Selenginsk, Kiakhta, Maimatchin,
Orkhon, *Karakorum*,	URGA, n.
Obi,	Barnaul, Bijisk.
Irtish, *l*	TOBOLSK, Omsk, Semipolatinsk.
Tobol, *l*	Tobolsk, *Kurgan*.
Tura,	Tiumen.
Taghil,	Nijni Tagilsk (in Perm).
Ishim, *l*	Petropaulovski.
Tom,	TOMSK.

JAPAN.

Boundaries.—N., Strait of La Perouse, separating it from the island Saghalien ; W., the Sea of Japan and Strait of Corea, separating it from Mantchooria and Corea ; S. and E., the North Pacific Ocean.

Including the Majica-sima islands, or Lesser Loo-Choo group, in the extreme south, and the Kurile archipelago in the north, the latitude extends from 24° 20′ to 51° 30′ N., and from lon. 129° to 155° 30′ E. The empire includes the large islands Niphon, Kiusiu, Sikokf, and Yezo, together with the great and lesser Loo-Choo groups, the whole of the Kurile islands (ceded by Russia to Japan, in 1875, in exchange for the southern half of Saghalien), and a vast number of smaller islands. The whole of the peninsula of Corea, however, is now subject to China. Yedo, the cap., near the central parallel, is in the same lat. as Gibraltar, Malta, Cyprus, Teheran, Kashmir, Tsi-nan, with Monterey and Cape Hatteras in the United States of America.

Area and Population.—The area, embracing the fore-mentioned sections, is believed to amount to 157,000 sq. m., or thrice the size of England without Wales ; while the population is estimated at 33,000,000, or nearly the same as that of the British Isles.

Surface.—The empire consists of an elongated archipelago subdivided into a series of minor groups, Japan Proper being in the centre. This archipelago is traversed throughout its greatest length by a chain of mountains of considerable elevation, some of which attain the snow limit, and many are active volcanoes, as Fusi-Yama, in the island Niphon, 14,177 ft. high. The remainder of the surface, though bold, is not rugged, and the majority of the hills are cultivated to the summit. Tre-

mendous earthquakes are common, but Europeans are very imperfectly acquainted with the interior.

Political Divisions.—The Japanese empire is now divided into 5 general governments, which are subdivided into 75 districts, each governed by a Prefect. The principal islands with their largest towns are as follows:—

NIPHON.—Yedo or Jeddo 780, Orogawa 20, Yokohama 62, Kanasowa 60, Simoda 30, Osaka 530, Miako or Kioto 567 n., Kobi (S. coast), Nee-e-gata 32 (N. coast).

SIKOK.—Tosa, Awa (E. coast).

KIUSIU.—Nagasaki 80, Saga (W. coast), Kagosima 200 (S. coast).

YEZO.—Hakodati 20, Matsmai 50, Endermo (S. coast).

LOO-CHOO.—Sheudi, Napa-Kiang (Great Loo-Choo I.)

Descriptive Notes.—**Yedo**, Jeddo, or Tokio, cap. of the empire, and the residence of the emperor or Mikado, is said to have an area equal to London, though containing only one-fifth its population. One of the streets is 10 m. long, and as closely crowded with houses as between Hyde Park Corner and Mile End. The citadel occupies an inclosure of 8 m. in circumference. The houses are mostly built of wood, and the city suffers frequently from destructive fires. **Orogawa**, the port of Yedo, and a place of considerable importance, from the complete command it has over the trade of the capital, of which it forms the key. Here Commodore Perry had his first interview with the Japanese officials in 1853, and here his squadron lay at anchor during his negotiations for a commercial treaty with the United States. **Miako**, a large and populous city, and the seat of various manufacturing and educational establishments, was, until 1868, the ecclesiastical cap. of the empire and the residence of the Tycoon, to whom the secular emperor was nominally subject. It abounds in temples, palaces, and exquisitely-laid-out gardens, and is regarded as the paradise of Japan. **Yokohama**, the station of the British fleet. **Osaki** is an active manufacturing town, and also a place of great commerce. **Tosa** and **Awa**, populous cities on the east coast of Sikokf, have never been visited by Europeans. **Nagasaki**, the principal seaport and commercial emporium of Japan, on the W. coast of the island Kiusiu, has, for the last two centuries, been the only place at which foreigners were allowed to trade. **Saga**, a large and populous city, possesses considerable trade. **Matsumai**, a large, fortified, and commercial city, with a commodious and well-sheltered harbour, contains numerous temples, theatres, and various other edifices, which are usually painted white. **Hakodadi**, one of the towns at which the ships of the United States, England, France, and Russia are allowed to trade. **Shendi**, the cap., and **Napa** the principal port, of the Loo-Choo group, which forms a sort of outpost to Japan, though owning a qualified subordination to China. The inhabitants are described as far advanced in civilisation, and as bearing the closest resemblance to the Japanese in language, customs, laws, dress, virtues, and vices.

Capes, Islands, Seas, and Straits.—See under "Asia."

Climate—Much milder than the corresponding latitude on the neighbouring continent, owing to the influence of the surrounding ocean; but the W. side is considerably colder than the E., on account of its proximity to Asia. In the S. the thermometer ranges

between 29° and 104° Fah.; but in the N. the cold is so intense in winter as to compel the half-savage Ainos to take refuge in caverns. Rain is very frequent, and the country is often visited by typhoons and fearful earthquakes, while volcanic eruptions of the most formidable character are by no means rare.

Geology.—Little is known of the geological formation of the country, save that it abounds with volcanoes, which form its most characteristic feature. One of these, a huge cone, four times the bulk of Ben Nevis, is said to have been formed in the third century of our era. The irruption of another destroyed twenty villages about seventy years ago; while a third sank beneath the sea, but continues to emit boiling water. The volcanoes greatly affect the tides: in some parts of Japan there is only one tide in the twenty-four hours, while in other parts there are three.

Minerals are very numerous and abundant, comprising gold, silver, lead, tin, copper, diamonds and other gems; amber, sulphur, nitre, salt, lime, marble, and plastic clay, in various parts. Whole mountains of porcelain earth are met with, and thermal and mineral springs frequently occur. The precious metals are very abundant, but iron is scarce. Coal is very plentiful, and is largely exported to China, where it supplies a large section of the inhabitants with winter fuel. The mode of mining is very rude, and performed by women and children in a state of nudity. Some of the richest coal-mines belong to Russians.

Botany.—Japan embraces the principal portion of Schouw's sixth Phyto-geographic region, sometimes called the *Japanese Region*. Its flora is very varied, and appears to occupy a middle place between that of Europe and of North America. It has a considerable affinity to the flora of India, and is more tropical than European. In the south are found palms, bananas, bamboos, bignonias, myrtles, and cypresses; in the north, oaks, pines, firs, the maple and iron-wood tree; while the varnish and camphor trees are said to be indigenous. Some of the timber is highly prized for shipbuilding. The principal cultivated plants are tea, cotton, rice, sugar-cane, tobacco, ginger, pepper, hemp, wheat, barley, buckwheat, soy, melons, pumpkins, cucumbers, and fruits of every kind. Rice yields two harvests annually, and constitutes, with fish, the chief food of the people. The vegetable-wax tree, the silk and paper mulberry, and the cotton-tree, are held in high esteem. Radishes are sometimes found, by a peculiar mode of cultivation, as large as the body of a man; while other plants are dwarfed to an almost incredibly small size. Agriculture, on which the Japanese bestow great care, and which they thoroughly understand, forms the chief occupation of the people. In fact, nothing can exceed their agricultural industry.

Zoology.—The Zoology of Japan is still imperfectly known to Europeans; but among the wild animals are monkeys, bears, boars, hyenas, foxes, weasels, deer, hares, rats, and mice. The fox is worshipped as a divinity by the most intelligent men in the country.

Birds are found in great variety, and include the falcon, pheasant, teal, stork, pigeon, wild-goose, duck, quail, curlew, plover, snipe, raven, pelican, crane, and heron. Reptiles, especially snakes, lizards, and tortoises, are numerous; and the seas abound with fish, which are taken in great quantities. Corals, pearls, and ambergris are also obtained. The domestic animals are few; elephants, camels, asses, mules, and sheep, are unknown; the horse is used only for the saddle, buffaloes and oxen being the animals employed for draught and burden; but it is contrary to the Buddhist religion to use their flesh as meat.

Ethnography.—The Japanese are probably of the Mongolian race, with some admixture of Malay blood; but it remains very uncertain from what country they migrated, as they have been located in their present insular home from time immemorial. They do not resemble the Chinese in physical structure, language, or ancient religion.

Dr Macgowan, who has paid great attention to the ethnology of Japan, regards the people as a mixture of the Caucasian, Kamtchatkan, and several other races. They are small in stature, the average height of the men being five feet four inches. The eyes are black, hair coarse, complexion sallow, hands and feet very small. After marriage the women blacken their teeth and pluck out their eyebrows. The Japanese, Loo-Chooan, and Corean *Languages* are very closely allied to each other: they are phonetic, polysyllabic, and, to some extent, inflexional, and thus differ widely from the Chinese; yet, on the whole, they have so many affinities with the Turanian or Finno-Tartarian family of languages, that they must, at least provisionally, be classed under that stock. The Japanese has several terms in common with the Mongolian and Finnish; very many Chinese words, greatly modified in pronunciation, have been introduced, partly by Chinese colonists, but more especially by the influence of Chinese literature, on which all the learning of Japan is based. The Japanese have a written literature, some science, and a taste for music. Their ancient *Religion* was the Sinto or Sin-sin ("doctrine of spirits"), so called because consisting chiefly in the adoration of numerous spirits supposed to preside over all things, whether in the visible or invisible world. But in the sixth century Buddhism was introduced, and now the great bulk of the inhabitants conform to it, while a few have adopted the doctrines of Confucius.

Government.—From time immemorial Japan had groaned under a feudal despotism of the severest type. Besides two emperors (a temporal and a spiritual) there were hundreds of nobles, named Daimios, each of whom maintained a standing army, and had absolute power within his own territory. But intercourse with foreigners has entirely altered the political and social condition of the country. There is now only one emperor, and all classes in the community pay him willing homage. In 1868 the Daimios magnanimously agreed to demit their vast authority, and to subject themselves and their dependants to the Mikado. In 1872 the Revenue was estimated at £10,375,000; the Expenditure to £9,707,000; and the Public Debt at £23,000,000.

Commerce, &c.—Japan had, like China, kept itself aloof for ages from other nations: some trade was allowed with Chinese merchants, who brought broadcloth and other stuffs to Nagasaki, in return for coal, sea-slugs, copper, and lacquered wares; and the Dutch were permitted to send two ships annually to the same port with wax, camphor, spices, ivory, lead, iron bars, quicksilver, glass wares, &c., for which they received in return, copper, silk, pitch, and Japanese manufactures.

In 1854 a general convention of peace and amity was signed between Japan and the United States, by which the ports of Nagasaki, Simoda, and Hakodadi were opened to the ships of the latter for trade and protection, and consuls from the United States were allowed to reside in Japan. In the following year similar privileges were accorded to England, France, and Russia. These privileges were still further extended in 1858—Lord Elgin, the British Ambassador, having entered Yeddo, and obtained from the emperor a liberal treaty of commerce, which secures the advantages of an unfettered commerce to all nations at the following ports—viz., Yedo, Yokohama, Hiogo, Osaca, Nagasaki, Niigata, and Hakodati. Foreigners, however, may now without molestation travel through all parts of the country. Altogether, the change which has taken place in the condition of Japan and in the sentiments of its people is wholly without a parallel in the history of nations. Japanese of high rank, and in great numbers, have been despatched by the government to study the advanced civilisation of Europe and America. On returning home their recommendations have been given effect to with a marvellous readiness. Already about half a million Japanese youths are being taught the history, arts, and science of the West, while a number of the sons of the nobility are attending the schools and universities of this country. Railways, telegraphs, postal communication, mints, lighthouses, &c., have been introduced. In short, Japan has taken a great leap, and fairly cleared five centuries at a bound; and it is impossible to foretell what further progress she may make ere the present century has run its course. It would seem, however, that she is destined to become to Eastern Asia what the British archipelago (which she so much resembles in relative position, size, population, and climate) is to Western Europe. The religion of Christ seems now to be all that is wanting to enable her to influence favourably the gigantic empire which lies in her vicinity.

AFRICA.

1. **Boundaries.**—N., the Mediterranean; W., the Atlantic; S., the Southern Ocean; E., the Indian Ocean, Red Sea, and Isthmus of Suez, which unites it to Asia.

Africa extends from lat. 37° 20′ N. (Ras-al-Krun) to 34° 50′ S. (Cape Agulhas); and from lon. 17° 33′ W. (Cape Verd) to 51° 22′ E. (Cape Guardafui); and thus embraces 72° of lat. and 69° of lon. Its exact centre, 1° 15′ N. of the equator, and 7° E. of the Bight of Biafra, is in

the same lat. as Quito, the mouth of the Amazon, and the centre of the islands Sumatra and Borneo, and in the same lon. as Stockholm, Breslau, Vienna, Cape Spartivento, Lake Tchad, and Cape Town. Its N. extremity is on the same parallel as San Francisco, Cape Charles, the Azores, Cape St Vincent, Athens, Lake Urumiah, Astrabad, and Yarkand; and its S., as Monte Video in Uruguay, and Adelaide in South Australia. Africa is the only continent which has a large extent of land on either side of the equator. Its great mass lies within the tropics, and consequently it is the hottest of all the continents, and may rightly be designated the tropical continent. It is not merely its geographical position that imparts to it this distinction; for it is separated from the two other continents of the Old World by comparatively narrow inland seas, while its plateaux and mountain-ranges are of very moderate elevation. It is, in fact, a vast peninsula of Asia-Europe, as south America is of the northern continent.

2. **Form and Dimensions.**—In form it resembles a pear, with a large indentation on the western side, and a corresponding projection on the eastern. The extreme length from N. to S., which is nearly equalled by the extreme breadth, falls little short of 5000 m. The coast-line is estimated at 16,000 m., or 1. m of coast to every 710 m. of surface; while Europe has 1 in 225 m., America 1 in 490, and Asia 1 in 550. This single fact goes far to explain the past history of Africa: shutting herself up from the sea on all sides, she has ever remained isolated from the rest of the world, and little influenced by those social or political revolutions that have so powerfully promoted civilisation in the other continents of the eastern hemisphere.

3. **Area and Population.**—Great uncertainty still attaches to the area of Africa, but it is usually estimated at 11,556,300 sq. m., being about three times the area of Europe with its islands, or two-thirds that of Asia. It is thus the second largest of the six great divisions of the globe, and decidedly larger than either of the other southern continents. No precise data can yet be given for the population; but according to the latest estimates it amounts to about 200,000,000, or somewhat more than one-seventh of the human race. Next to Europe and Asia, it is the most densely peopled continent, having 16¼ persons to each sq. m., while Asia has 42, and Europe 75. Formerly the population of Africa was estimated at from 60,000,000 to 80,000,000; but recent travellers, who have penetrated far into the interior, have found many places much more densely peopled than they had been understood to be.

4. **Political Divisions.**—As much of the continent remains unexplored, and as the political relations of many of the barbarous nations lying south of the Sahara are continually fluctuating, the actual number of independent states cannot be specified with any degree of accuracy. The annexed table, however, embraces all the really important divisions, though not a few of the designations employed are rather geographical than political.

TABLE OF AFRICAN STATES AND COUNTRIES.

NAME AND POSITION.	Area in Eng. Square Miles.	Population according to latest Estimates.	Capital.	River, &c., on which the Capital stands.
Egypt, Nubia, Kordofan, &c., in the N.E.,	900,000	10,000,000	Cairo	Nile.
Abyssinia, S. of Nubia,	158,420	3,000,000	Gondar, &c.	Lake Tana.
Barbary States, S. of the Mediterranean,	(940,700)	(11,564,218)	..	..
Tripoli, Barca, and Fezzan, W. of Egypt,	356,820	1,150,000	Tripoli	Coast.
Tunis, W. of Tripoli,	47,360	2,000,000	Tunis	Coast.
Algeria, W. of Tunis,	267,600	2,414,215	Algiers	Coast.
Marocco, S.W. of Algeria,	268,920	6,500,000	Marocco	Tensift.
The Sahara, S. of Barbary States,	2,436,510	3,700,000	Mourzouk, &c	An Oasis.
Senegambia, S.W. of the Sahara,	250,000	12,000,000	Bathurst, &c.	Gambia.
Soudan or Nigritia, E of Senegambia,	1,213,000	56,400,000	Timbuctoo, &c.	Niger.
Upper Guinea, S.E. of Senegambia,	360,000	10,000,000	Coomassie, &c.	Dah.
Lower Guinea, S.E. of Upper Guinea,	312,503	9,057,500	Benza, &c.	n. Congo.
Land of the Hottentots, S. of Lower Guinea,	1,000,000?	10,000,000?	Barmen, &c.	Swakop.
Cape Colony, Natal, Griqualand, and Basutoland in the S.,	229,582	1,039,309	CapeTown, &c.	Table Bay.
Kaffraria and Zululand, on the S.E. coast,	86,000	1,200,000	Butterworth	S.E. Coast.
Orange Free State, W. of Natal,	44,000	245,000	Bloemfontein	n. Orange.
Transvaal Republic, N. of Orange Free State,	118,470	275,000	Potchefstroom	Vaal.
South-Central Africa, N. Cape Colony,	800,000	15,000,000	Linyante, &c.	Chobé.
Sofala and Mozambique, on the E. Coast,	382,700?	300,000	Mozambique	Indian Ocean.
Zanzibar, N. of Mozambique,	706,725?	10,000,000?	Zanzibar	I. Zanzibar.
Country of the Gallas and Somali, N. of Zanzibar,	890,000?	12,000,000?	Harar, &c.	n. Webbe
Region of the Great Lakes, W. of Zanzibar,	780,000	10,500,000	Ujiji	Lake Tanganyika.
Regions Unexplored,	826,200?	27,587,000?	..	..
Madagascar, E. of Mozambique,	232,000	4,000,000	Antananarivo	n. centre.
	12,616,610	209,325,055		

5. **Surface and Mountains.**—The surface of Africa, as a whole, consists of an immense, moderately-elevated plateau. If we draw a line from the Gulf of Aden to the Bight of Biafra, the region lying north of the line forms an immense oval, having its greatest extension from east to west; while that to the south of the line forms a triangle, with its greatest length from north to south. This triangle is in general of twice the elevation of the oval, while in each the mountain-ranges pursue the direction of the greatest length, along the outer margin, with the lower grounds forming the interior. The general elevation of the northern plateau is about 2000 ft., and of the southern from 4000 to 5000 ft. A narrow, elongated plain occupies the N., from the Mediterranean to Mount Atlas, and from the Atlantic to the Red Sea. S. of Mount Atlas is the Sahara, or Great Desert, an immense sandy waste, but presenting great diversity in its physical configuration, some parts being low and flat, while in others it consists of table-lands and hills. The region of Nigritia, of one-fourth the size of the Sahara, consists of an immense plateau of from 1000 to 3000 ft. in elevation. The basin of Lake Tchad, however, is less than 1000 ft. high; but the region between the lake and the Chadda rises in Mount Mindif to 6000 ft. S. of Nigritia the Kong Mountains, from 2000 to 3000 ft., form an immense wall, separating Soudan from Guinea. Near the sources of the Chadda, Mount Alantika rises to the height of 9000 ft. Proceeding eastward, we arrive at the mountains of Abyssinia, one of which, Ras Detschen, is 15,986 ft. high, and Abba Jarrat 15,020 ft. Proceeding to the peninsular part of the continent, we find an immense mountain-range skirting the eastern side, from C. Guardafui to the Cape of Good Hope. The range attains its maximum elevation in the volcanic peaks of Kilimandjaro, 20,065 (the highest mountain in Africa, so far as yet known), and Kenia, 18,000 ft. Towards the apex of the triangle are the Drakensberg mountains in Natal, 10,357 ft., and the Compass Berg, in Cape Colony, 8500 ft. On the western margin of the triangle are the Omatako Berg, in the Damara Country, 8739 ft.; the Camaroons Mountains, near the Bight of Biafra, reaching, in Albert Volcano, a height of 13,000 ft. Far to the east of these are the Blue Mountains, skirting the W. side of Lake Albert Nyanza, and, according to Sir Samuel Baker, who saw them in 1865, supposed to be 7000 ft. above the level of the lake, or 9500 ft. above the sea. There are no extensive low-lying plains in Africa, such as occur in other quarters of the globe, with the exception of the basin of Lake Tchad, 830 ft. above the sea-level; the oases and some waterless depressions of the Great Desert; the basin of Lake Tanganyika, which has an elevation above the sea of 2710 ft.; and certain parts of the coast, especially the deltas of the Nile, Senegal, Gambia, Rio Grande, and the Quorra or Niger.

6. **Isthmus and Capes.**—Isthmus of Suez, uniting Africa with Asia, 72 m. broad, and now traversed by a canal; Capes Bonn and Ras-al-Krun, N. of Tunis; Spartel, N. of Marocco; Cantin and Nun, W. of Marocco; Bojador and Blanco, W. of the Sahara; Verd

nd Roxo, W. of Senegambia; Palmas, Three Points, and Formosa, S. of Upper Guinea; Lopez and Negro, W. of Lower Guinea; Good Hope and Agulhas, S. of Cape Colony; Corrientes, S.E. of Sofala; Delgado, N.E. of Mozambique; Guardafui, the most E. point of Africa; St Mary and Amber, the S. and N. extremities of Madagascar.

7. **Islands.**—The islands are chiefly arranged in groups or small archipelagoes. *In the Mediterranean*, Jerbah and Karkenah, E. of Tunis. *In the North Atlantic*, Azores, Madeira, Canary, and Cape Verd Islands. *In the G. of Guinea*, Fernando Po, Prince's Island, St Thomas, and Annabon. *In the South Atlantic*, Ascension and St Helena. *In the Indian Ocean*, Madagascar, Mauritius Group or Mascarene Islands, Comoro, Zanzibar, Amirantes, Seychelles, and Socotra.

The **Azores, Madeira,** and **Canary Isles** have been described at p. 183. The **Cape Verd Islands,** situated 320 m. west of Cape Verd, form an archipelago of ten principal and several smaller islands—all of which belong to Portugal; area, 1650 sq. m.; pop., 85,400. The ten largest islands are Sant' Antonio, Santo Vicente, Santa Luzia, Santo Nicolao, Sal, Boavista, Maio, Sant' Iago, Fogo, and Brava. They are all of volcanic origin, and Fogo, which is 9157 ft. in elevation, still emits much smoke. The soil is moderately fertile; the absence of trees and the scarcity of water cause frequent and severe distress. The climate is very hot, but it is tempered by the sea-breezes. The chief products are maize, rice, orchal, French beans, coffee, cotton, tobacco, and fruits. Turtles are numerous on the coasts, where amber is also abundant. **Fernando Po, Prince's Island, St Thomas,** and **Annabon,** all in the Bight of Biafra, are mountainous, beautiful, and fertile, yielding rice, sugar, and tropical fruits. Fernando Po and Annabon belong to Spain, the other two to Portugal. Santa Isabel, in Fernando Po, has an elevation of 10,700 ft. **Ascension Island** and **St Helena,** both belonging to Britain, are situated far out in the Atlantic, the former about 500 m. S.S.E. of C. Palmas, and the latter nearly 1200 m. E.S.E. of C. Lopez. Ascension is retained as a station at which ships may touch for stores, on their passage to and from Cape Town and the East Indies; area, 35 sq. m.; pop., 400; capital, Georgetown. St Helena is of volcanic origin, and consists of rugged mountains interspersed with numerous ravines, in one of which stands Jamestown, the capital; area, 48 sq. m.; pop., 7000—about one-half of whom are whites. Only one-fifth of the surface is fertile, yielding the products both of European and tropical countries. The climate is mild and very healthy. It was ceded to the East India Company by Holland in 1673. St Helena is chiefly noted as the place of exile of Napoleon Buonaparte, from 1816 to his decease in 1821. His remains were exhumed and removed to Paris in 1840. **Madagascar,** the only large island of Africa, and the sixth largest in the world, is situated in the Indian Ocean, east of the Portuguese possessions, from which it is separated by the Channel of Mozambique, 240 m. wide. It extends from lat. 12° 21′ to 25° 40′ S., and from lon. 43° 20′ to 50° 31′ E. The area is estimated at 232,000 sq. m., or more than four times the size of England without Wales; and the pop. at about 4,000,000. It is divided into numerous small states, all of which are tributary to one sovereign, whose capital, Antananarivo, situated on a lofty plateau, near the centre of the island, is said to contain 80,000 inhabitants. Tamatave, the chief commercial town, is situated on the coast, N.E. of the cap. Other towns are Fort

Dauphin, Manambatoo, Mananzari, Andevoranto, Port Louis, and Port Luke, all on the east side of the island. A chain of mountains traverses the island in the direction of its greatest length: the highest summit, Ankaratra, near the cap., attains an altitude of about 11,000 ft. Minerals are abundant, especially gold, silver, copper, lead, iron, and coal. The iron is mined to a considerable extent, and the coal is employed in smelting it. The climate is hot and extremely unhealthy to Europeans, especially along the E. coast. The soil is very fertile, with rich pasturage, and magnificent forests which contain a great variety of beautiful and useful trees. Wild animals are few in number, consisting chiefly of lemurs (a species of ape peculiar to this island and the Comoro group in its vicinity), the ounce, wild-dog, wild-cat, and fox. Birds and crocodiles are very numerous; and locusts—which enter the island from the south-west—visit it periodically, and cause much damage to the vegetation. Domestic animals comprise the bison, sheep, swine, dog, and cat. Silk-worms are reared, and honey and wax are obtained in great abundance in the woods. The chief vegetable productions consist of medicinal plants, pepper, cotton, indigo, sugar-cane, tobacco, rice, and manioc. The principal articles of export are the native products now enumerated, while the imports consist of linen, ribbons, glass, and Spanish piastres. The inhabitants consist of two distinct nations—viz., the Ozumbe, who were the aborigines; and the Hooar, who appear to have arrived about 800 years ago. Both nations, however, belong to the Malay race, and speak the Malagasy, which forms a member of the Malay-Polynesian family. In regard to simplicity and phonetic structure, this family excels all others in the world. For example, most of them have but ten consonants, while none of them allows a syllable to close with a consonant, or to begin with more than one. Christianity was introduced here in 1818. The missionaries at first met with great success under the patronage of King Radama; but, in 1828, he was succeeded by Queen Ranavola, who cruelly massacred vast numbers of the Christians. After her death, in 1861, the progress of the gospel in the island has been almost unprecedented. The **Mauritius Group**, discovered in 1545, consists of three islands, Bourbon, Mauritius, and Rodriguez. The first-named, also called Ile de la Reunion, 400 m. E. of Madagascar, has been a French colony since 1642: area, 824 sq. m.; pop., in 1861, exclusive of its dependencies (Nossi Bé, Mayotta, and the small island St Marie, near Madagascar), 183,361. The cap., St Denis, lies on the north side of the island. Piton de la Fournaise, an active volcano, is 7218 ft. high. The climate has recently undergone a great change for the worse. The annual fall of rain is, on an average, 128 in., and the mean temperature, 77° Fah. Terrific hurricanes are common, and cause great destruction. The soil is fertile in the vicinity of the coast, producing sugar, coffee, cloves, maize, rice, and tobacco, which, together with dye-woods and saltpetre, form the principal exports. **Mauritius**, also called **Isle of France**, situated 115 m. N.E. of Bourbon, was discovered by the Portuguese in 1505, and received its name from the Dutch, who were the first settlers, in honour of Prince Maurice. It was occupied by the French from 1713 to 1810, when it came into the possession of Britain. Area, 700 sq. m.; pop., 313,462. It is mountainous, thickly wooded, and well watered. The climate is healthy; the mean temperature at Port Louis, the cap., is 78°; but being situated in the hurricane region of the Indian Ocean, it is subject to destructive tempests. The soil is pretty fertile, producing coffee, indigo, cotton, and ebony. The principal product, however, is sugar, which is now cultivated to the almost total

neglect of everything else. In 1866 the exports of sugar amounted to 248,000,000 lb., while the imports from Great Britain were valued at £583,000. **Rodrigues**, situated 300 m. E. of Mauritius, of which it is a dependency. **Comoro Isles**, a group of volcanic islands, at the northern entrance of the Mozambique Channel. They contain 80,000 inhabitants, who speak the Arabic language, and profess the Mohammedan religion. They are governed by native sultans; but Mayotta, one of their number, was ceded to France in 1846. They are of volcanic origin, mountainous, and fertile in tropical productions. Their chief exports are sugar, coffee, cocoa-nut oil, and tortoise-shell. **Zanzibar** and **Pemba**, off the coast of Zanguebar, are fertile, densely peopled, and tributary to the Sultan of Muscat. Shanganny, in the former island, is the residence of the vassal Sultan. Zanzibar produces cloves, cocoa-nuts, manioc, sugar-cane, coffee, tobacco, pomegranates, and the castor-oil plant. It is also the chief market in the world for the supply of ivory and gum-copal. **Amirantes** and **Seychelles**, two groups of islands in the Indian Ocean, under the jurisdiction of Great Britain. They are of granitic formation, are surrounded with numerous rocks, and contain 9000 inhabitants. The Amirantes are destitute of water, but are visited by the inhabitants of Mauritius for the land-turtles with which they abound. The Seychelles are elevated on a coral bank; their most remarkable product is the *coco de mer*. The chief town, Port Victoria, contains a garrison. **Socotra**, 100 m. E. of Cape Guardafui, is a dependency of Muscat. The area is estimated at 1000 sq. m., and the pop. at 5000, who are mostly Bedouins. It has been long famous for its aloes, dragon's blood and other gums, tamarinds, tobacco, dates, millet, and ghee.

8. **Seas, Bays, Gulfs, and Straits.**—Mediterranean Sea, between Africa and Europe; G. of Sidra (*Syrtis Major*), bet. Barca and Tripoli; G. of Cabes (*Syrtis Minor*), E. of Tunis; Str. of Gibraltar (*Fretum Herculeum*), bet. Marocco and Spain; G. of Guinea, bet. Upper and Lower Guinea; Bights of Benin and Biafra, on either side of the delta of the Niger; Table Bay, S.W. of Cape Colony; Mozambique Channel, bet. Mozambique and Madagascar; G. of Aden, Str. of Babelmandeb, Red Sea, and G. of Suez, bet. Africa and Arabia.

9. **Mountains and Table-Lands.**—(See under the article "Surface," and under the countries in which they are respectively situated.)

10. **Rivers.**—As much of the interior of Africa remains unexplored, and as well-defined water-partings are rare, no table of river-basins, similar to those given under "Europe" and "Asia," can be given. They may, however, be arranged into four systems, corresponding to the four great basins to which they belong—viz., the Mediterranean basin, the Atlantic basin, the basin of the Indian Ocean, and the continental basin, or basin of Lake Tchad.

1. BASINS INCLINED TO THE MEDITERRANEAN.—The **Nile** is the only great river belonging to this basin. Recent researches in Eastern Africa render it almost certain that the White Nile or Bahr-el-Abiad has its origin in Lake Victoria Nyanza, and the Shibiyu, a large river flowing into its S.E. corner. The Victoria Lake is 3808 feet above sea-level. The Nile first flows in a northerly direction for about 800 m., when it

unites with a large affluent from the W. named Bahr-el-Ghazal; then proceeding northward, it meets on the right the Giraffe and Sobat, and then the Blue Nile or Bahr-el-Azrek, at Khartum, in Nubia. Its only other tributary is the Atbara or Tacazze, from Abyssinia, which joins it on the right. The total direct course of the Nile is estimated at 4000 m., and the area of its basin at 520,000 geographical sq. m. 2. ATLANTIC BASIN.—The **Senegal**, from Bambarra, 1000 m. long, pursues a N.W. course, and falls into the Atlantic in the N. of Senegambia. The **Gambia**, from the Tengui Mountains, flows W.N.W. for 1000 m., and falls into the Atlantic at Bathurst. The **Rio Grande**, from Footajallon, flows W. to the Atlantic; length, 400 m. The **Quorra, Joliba**, or **Niger**, from the Kong Mountains, flows N.E. to Timbuctu, and then S.E. to the Bight of Benin; total course, about 2000 m. The **Congo**, by far the largest river in W. Africa, is known in its upper course as the Lualaba, which receives the Lukuga from L. Tanganyika. The **Orange** between the country of the Hottentots and Cape Colony, flows W. to the Atlantic, after a course of nearly 1000 m. 3. BASIN OF INDIAN OCEAN.—The **Zambesé**, an immense river of Eastern Africa, explored by Livingstone in 1856, rises in Lake Dilolo. It first receives the name of Leeba for about 200 m., when it is joined on the left by the Leambye from N.E. About 300 m. farther on it receives the Chobe from the S.W.; about 40 m. E. of the confluence of the Chobe, Dr Livingstone discovered the Victoria Falls, where the river, now about half a mile wide, rushes over a precipice 100 ft. deep. About 300 m. below the Falls, the Zambesé receives the Kafue, on the left bank; and, about 140 m. farther down, it is joined by the Loangwa, flowing from the N. Flowing E. and S.E. for about 300 m. more, it receives the Shiré, from the great Lake Nyassa, lately discovered, and finally reaches the ocean, after a total course of about 1430 m. In common with the other large rivers of Africa—as the Nile, the Zaire, and the Niger—the Zambesé is characterised by periodic inundations. 4. BASIN OF LAKE TCHAD.—The **Yeou**, from near Jacoba, flows N.E. 300 m., and the **Shary**, from Dar Kulla, flows N.W. 350 m. into Lake Tchad.

11. **Lakes.**—Many of the lakes of this continent are of great magnitude, some of them rivalling the largest lakes of N. America and Asia. They are generally fresh, and for the most part drained by rivers belonging to the great oceanic basins. The following are the principal:—

NILE BASIN.—The Victoria Nyanza and Albert Nyanza, on the equator, drained by the White Nile. The former has an area of 30,000 sq. m. (being about the size of Scotland), and an elevation of 3740 ft. above the sea. It discharges its waters into Albert Nyanza, lying to the W. of it, 2720 ft. high, and nearly its equal in size. Victoria Nyanza, which probably forms the source of the Nile, or at least the main reservoir which feeds it, was discovered by Captains Speke and Burton in 1859; and the Albert Nyanza by Baker in 1864. South-west of Victoria Nyanza is Lake Tanganyika, about 13,000 sq. m. in extent, or about the same size as Lake Baikal. Its elevation above sea-level is stated at 2710 ft. Its drainage, a question so long disputed, is now all but settled. In May 1874, Lieutenant Cameron, while carefully exploring its western shores, found a large river, named the Lukuga, issuing out of the lake near lat. 6°. The natives informed him that it pursues a S.W. course till it meets the famous Lualaba (of Livingstone), which is known to flow in a N.W. direction, through innumerable lakes. This river is probably the head

stream of the gigantic Congo.* The only other important lake in this basin is Lake Tana or Dembea in Abyssinia, 6120 ft. above the sea, and forming the head-waters of the Bahr-el-azrak or Blue Nile.

ZAMBESE BASIN.—The only large lake known in this basin is Nyassa or Nyanja, W. of Mozambique, and about 350 m. inland. It is 250 m. long, by about 50 m. broad; is about 1575 ft. in elevation, a fact which renders it just possible that Lake Tanganyika discharges its contents into this lake. It is drained by the river Shiré into the Zambesé. The small lake Shirwa, 2000 ft. high, lies to the S.E. of it, but has no known outlet. About 900 m. S.W. of Lake Nyassa is the much smaller lake Ngami, 2385 ft. above the sea. Its drainage is yet uncertain, but it probably sends its waters to some affluent of the Zambesé. Lake Dilolo (lat. 11° 15′ S.) is regarded by Livingstone as the source of both the Zambesé and Congo. So far as known, there are no lakes of any importance in the basins of the other large rivers of Africa.

CONTINENTAL BASIN.—Near the centre of the continent, in the north of Soudan, is Lake Tchad, a large shallow fresh-water lagoon of variable extent, having no outlet, but receiving the rivers Shary from the S. and Yeon from the W. Its elevation is 830 ft. above the sea, and it contains many islands. About 200 m. east of Lake Tchad is the much smaller Lake Fittrè, which receives the Batha, but has no outlet. In the low ground south of Mt. Atlas are numerous salt-water marshes, named *Sebkas*, the chief of which are Faroon, in Tunis; Melrir and Shergui, in Algeria; Rarbi and Tigri, in Marocco; and Gurara, in the N. of the Sahara (lon. 1° W.) In the S.E. of Abyssinia is the small salt lake Assal, chiefly remarkable for being 760 ft. below the level of the Red Sea.

12. **Climate.**—Africa is distinguished from all the other great divisions of the globe by its high temperature and general deficiency of rain. These characteristics mainly depend on its position and configuration.

Situated for the most part within the tropics, with the equator passing through its centre, it is more exposed to the vertical rays of the sun than any other continent; while the absence of deep inlets of the ocean and the prevalence of lofty mountain-ranges along the coasts, prevent the cool sea-breezes from penetrating into the interior. Accordingly, the intertropical portion, more especially Senegambia and other parts of the western coast, have been found more unhealthy to Europeans than any other region of the globe: here the most deadly fevers prevail, and the strongest constitutions are not proof against the pestilential influences of the moist and heated atmosphere. On the other hand, Southern Africa is more favourable for the recovery of persons afflicted with pulmonary complaints than any other region of the earth's surface. Another

* In order to complete this great discovery, Cameron sailed down the Lukuga, hoping to emerge at the mouth of the Congo. After a perilous journey of nineteen months he arrived safely, in December 1875, at Loanda, having been obliged to deviate from the route he wished to follow, owing to the hostility of the natives. It is interesting to know that nearly 300 years ago more was known of the geography of Central Africa, and especially of the region where the Nile has its source, than at the present day. There is an old map now in the British Museum, drawn by a Portuguese named Duarte Lopez, and published in 1591, on which are laid down the two great lakes Victoria Nyanza and Albert Nyanza, approximately in their right positions on the equator, with another great lake due south of the Albert Nyanza (probably intended to represent Lake Tanganyika, or possibly the Nyassa of Livingstone). From the western side of this southern lake flow two rivers, the one forming the head-waters of the Zaire or Congo, and the other finding its way to Lake Albert Nyanza, and thus forming the head-waters of the Nile. (See *Anniversary Address of Sir Roderick I. Murchison. 24th May* 1869.)

prominent feature of the climate of tropical Africa is the division of the year into the dry and rainy seasons, which in most places succeed one another with undeviating regularity. Within the tropics, the rains follow the course of the sun—the rainy season occurring within either half of the torrid zone as that luminary approaches the zenith. On the N. side of the equator the tropical rains extend northwards to the border of the Sahara, but in Nubia they reach as far N. as the 18th parallel. Beyond the tropics, the rain falls in either hemisphere at the period when the sun is on the opposite side of the equator—that is, in the winter of those latitudes. The winds which bring the heaviest rains in tropical Africa are called *monsoons*, and come from the Indian Ocean. They continue from April to October; but, from Mozambique to the equator, the rainy season is during April, June, and July. The climate of North Africa is greatly affected by the position of the Atlas range of mountains. Between this range and the Mediterranean the country is well watered: but between Mount Atlas and the northern limit of the tropical rains, scarcely any rain falls during the year. In Upper Egypt also no rain falls for several years in succession. The same phenomenon also occurs in South-Western Africa, between Lake Ngami and the Orange River—a region now known as the Desert of Kalahari. The mean annual temperature of the greater part of intertropical Africa is 79° Fah.; but in Eastern Nigritia and Abyssinia, or the region extending from Lake Tchad to the Red Sea, it is as high as 88°, while at Mourzouk, in Fezzan, the summer heat reaches 130° Fah. in the shade (see table of temperature, p. 35).

13. **Geology.**—The geology of Africa remains as yet in an extremely imperfect state; but, so far as known, *Crystalline and Igneous Rocks* prevail over the whole southern half of the continent, as also in North-Eastern Africa, between the Nile and Red Sea. *Primary and Transition Rocks* occupy an extensive tract in South-Western Africa, between the Cape of Good Hope and the northern limit of the Namaqua country, together with two smaller areas in Senegambia and Dahomey. *Secondary Rocks* form the prevailing strata over the entire region north of the chain of Mount Atlas, extending eastward as far as the Nile, and occur also in extensive patches in Fezzan, Kordofan, Kanem, Bambarra, Sierra Leone, and the Gold Coast. *Tertiary and Alluvial strata* cover, so far as known, the remainder of this continent, especially the Sahara, Soudan, and two long narrow belts, one along the Mediterranean coast from the south of Tunis to the eastern frontier of Egypt, and the other along the Atlantic coast from the mouth of the Zaire to Cape Town. *Volcanic Rocks* are known to occur in East Africa, between Victoria Nyanza and the coast, as also in the region of the Cameroons Mountains, near the Bight of Biafra.

14. **Minerals.**—Africa appears to be more deficient in minerals than any other continent, and very few mines are wrought.

Gold is obtained in considerable quantity in certain parts of Senegambia and Upper Guinea, in Nigritia, Mozambique, and Abyssinia; silver is rare, but is found in Marocco and Abyssinia; copper in the Atlas range, in Nigritia, East Africa, Cape Colony, and the basin of the Zambesé; lead and antimony in Mount Atlas; iron in many places, especially in Algeria, Abyssinia, Nigritia, and Cape Colony. Salt is

found in many localities, and forms the most valuable mineral product of this continent. A chain of salt-water lakes skirts the southern base of the mountains of Barbary; and abundance of saline deposits, as the nitrates of potash and of soda, meets the traveller in South Africa, in the form of a thick incrustation on the surface of small lakes. Coal is found in Madagascar, Mozambique, and at Zumbo on the banks of the Zambesé. Very recently a tract of country nearly as large as England, situated between the Orange River Free State and the Transvaal Republic, has been found to possess valuable diamond-mines.

15. **Botany.**—The botany of Northern Africa is similar to that of the south of Europe, and has been already treated of (p. 82).

The remainder of the continent is embraced within Schouw's 13th, 14th, and 23d Phyto-geographic Regions (p. 54). The first of these is the *Desert Region*, and embraces the Sahara, characterised by an extremely scanty flora, consisting of a few prickly shrubs and grasses, except in the oases where the date-tree, corn, and some vegetables are cultivated. The 14th region is that of *Tropical Africa*, or Adanson's Region. It extends from the fifteenth degree of north latitude to the Tropic of Capricorn, and from the Atlantic to the east side of Madagascar —thus embracing the whole region visited by periodical rains. Of this immense region the interior is little known; and the remainder, though possessing a luxuriant and gorgeous flora, is neither rich in species nor in peculiar forms. In general, however, it is characterised by the presence of the baobab, the largest known tree: the *Leguminosæ*, *Rubiaceæ*, and *Cyperaceæ* are also very prevalent. The eastern part, including Madagascar, has a peculiar flora, distinguished by the genera *Danais*, *Ambora*, *Dombeya*, and others. Abyssinia is the native region of the coffee-shrub. In Guinea are found the butter-tree, the gum-tree, the African teak, the caoutchouc, cabbage, mahogany, and mangrove trees, the acacia, cactus, and cassia. In the basin of the Zambesé the principal vegetable products are coffee, vines, sugar-cane, cotton, and flax; and the inhabitants cultivate wheat, manioc, yams, millet, &c. The 23d region, or that of *Southern Africa*, between the Tropic of Capricorn and the Cape of Good Hope, will receive attention when we come to treat of Cape Colony, Natal, and Kafraria.

16. **Zoology.** — This continent forms the third great zoological kingdom of naturalists (p. 57), and is distinguished from all others by the richness and variety of its fauna. Nearly all the species of animals found in the Old World are here represented in their best varieties.

MAMMALIA.—Of the 1704 species of known mammals, about 446, or considerably more than one-fourth of the whole, are found in this continent; and what is still more remarkable, no fewer than 399 species are peculiar to it (p. 58). In this respect it is distinguished from all the other zoological kingdoms, with the exception of Central and South America, where the ratio of peculiar species is still higher. Of its 63 species of *Quadrumana* only one occurs in any other continent—viz., the Barbary ape, found on the Rock of Gibraltar. Monkeys, baboons, and apes abound in every part of the continent where palm-trees are numerous; but the most remarkable animal of this order is the gorilla of the western coasts, which approaches nearer the human form than even the orang-outang of Eastern Asia. In the island Madagascar are found the lemur, the lory, and the remarkable aye-aye or *Cheiromys*. The *Car-*

nivora comprise 174 species, of which 151 are peculiar. They are in general highly ferocious and formidable to man. At the head of these stands the lion, of which there are three varieties—the Barbary, Senegal, and Cape lions. The tiger does not occur in Africa, nor have any bears been found, while the wolf and jackal are nearly confined to the region north of the Sahara. Leopards, panthers, and hyenas, are numerous over the whole continent, as also the civet, which is prized for its perfume. The ichneumon is widely distributed, and one species frequents the valley of the Nile, where it is found useful in destroying the eggs of the crocodile and other reptiles. The *Marsupialia* are the only order of mammals which have no representation in Africa. The *Rodentia* are 104 in number, of which no fewer than 94 are peculiar, comprising various species of jerboas, rabbits, hares, squirrels, rats, and mice. The *Edentata* comprise 6 species, all of which are peculiar. The 18 *Pachydermata* are, with one exception, all peculiar. First in rank amongst these stands the elephant, which is found in all parts of the continent south of the Great Desert. It attains to a great size, and is of a different species from the Asiatic elephant. Its flesh is held in much esteem, while the tusks constitute one of the principal articles of export. The rhinoceros, which is hunted for its hide and horns, frequents the same haunts as the elephant. The hippopotamus, an animal peculiar to Africa, where it exists in two species, frequents all the larger rivers, especially the Zambesé, the Zaire, the Niger, the Senegal, the Gambia, and the upper course of the Nile. Its teeth consist of the finest ivory, for the sake of which it is hunted by the Cape colonists. The engallo, or wild-boar, differs from the European species; while the zebra, quagga, and dow, which abound in the centre and south, are all peculiar to this continent. The *Ruminants* are greatly more numerous than in any other part of the world of equal extent—there being no fewer than 65 species, nearly all of which are peculiar; and the researches of Livingstone, Barth, and others, have added greatly to the number. The antelopes alone are said to amount to 34 species. The cameleopard, or giraffe, is peculiar to this continent, and extends from the Orange River to the Sahara. Buffaloes abound in Southern and Central Africa, several species being found in the basin of the Zambesé. The one-humped camel traverses the dreary desert regions, while sheep, goats, and deer are numerous in the centre and south. Of the 16 *cetaceous mammals*, 7 are proper to the seas and coasts of this continent—the most remarkable of them being a species of whale, called lamantin, which is supposed to be the original of the fabulous mermaid.

BIRDS.—The birds of Africa are far less numerous than the mammals, there being only 164 species north of the Sahara, 211 in tropical, and 229 in Southern Africa. Among the most remarkable species are the ostrich—the geographical distribution of which is nearly coextensive with this continent, though corresponding species are found in Australia, South America, and the Indian Archipelago. Its feathers form a highly-valued article of traffic, the plumes being in much request in Europe for ladies' head-dresses. Its flesh, when young, is palatable, and its eggs are considered a delicacy. The vulture, owl, falcon, and eagle are among the birds of prey; the Guinea-fowl among the gallinaceous birds; the ibis and flamingo among the waders; the songsters are 43 in number; while the climbers include numerous varieties of parrots, cuckoos, and kingfishers. The now extinct *dodo*, at one time found in the islands Mauritius, Bourbon, and Rodriguez, was extirpated by the Dutch in the seventeenth century.

REPTILES of every order are to be found in this continent. The land-tortoises are chiefly confined to it; and though the serpents are few in number, the species that exist seem very widely spread. The huge python is found in the swamps and morasses of the west. Of the 203 species of known saurians, 24 are found in Barbary, and 28 in Egypt, Nubia, and Abyssinia. These include crocodiles, geckos, iguanos, monitors, true lizards, and skinks. The true crocodiles are peculiar to this continent, as are the gavials to Asia, and the alligators or caymans to America. The common crocodile, the largest of living reptiles, though no longer found in the delta of the Nile, abounds in all the larger rivers.

INVERTEBRATA.—Africa is peculiarly rich in insects. Of these the locusts are the most remarkable, having been from time immemorial the scourge of this continent. Hardly less formidable are the termites or white ants, which swarm in countless myriads in tropical Africa. In the basin of the Zambesé, and many other localities in the S. and E., there is a venomous fly, called the tsetse, whose bite is fatal to nearly all domestic animals, especially the ox, horse, and dog.

17. **Ethnography.**—The people of Africa, so far as known, belong to three great races—the Caucasian, the Negro or Ethiopic, and an intermediate race, sometimes called the Nilotic; but, perhaps, three-fourths of the whole belong to the Negro race, for the characteristics of which see under "Soudan," p. 475.

The whole of Northern Africa between the Mediterranean and Soudan, and extending from the valley of the Nile to the Atlantic, is peopled by nations belonging to the Syro-Arabian branch of the great Caucasian family (p. 61, 469). The nations belonging to this branch in Africa are the Berbers, who receive different names in different localities. They call themselves *Amazigh*, but in Marocco they receive the name of *Shulu*, and in Tunis and Algeria *Kabyls* ("mountaineers"). They have distinguished themselves in their struggle for independence against the French, who call them *Zouaves*. They appear to have been the earliest white inhabitants of Northern Africa, but have been driven from their original settlements by the Arabs who, in the seventh century, entered the country under the standard of the Mohammedan conquerors who now possess the valley of the Nile and most of the Mediterranean coast. These are now intermingled with Moors, Turks, French, and Jews. Central Africa, extending from the Sahara to the Zambesé, and from the Atlantic to the Blue Nile, is occupied by the Negro race, to which the vast majority of the population of this continent belongs. They are divided into a great number of distinct nations, and constitute many powerful states, the principal of which will be noticed under Senegambia, Guinea, and Soudan. Southern Africa embraces two leading races—the Hottentots and Kaffirs. The former are confined to the S.W. angle of the continent, extending from Cape Negro to Cape Agulhas, and penetrating into the interior to the desert of Kalahari. They are a nomadic people, never cultivating the soil nor rearing any domestic animal, and deriving their subsistence from roots and beans and the flesh of game. They form, indeed, one of the most degraded sections of the human race, and are proverbial for their deformity. The great Kaffir nation occupies the entire remainder of Southern Africa—living N. and E. of the Hottentots, and extending, in some places, from sea to sea. On the western side of the continent they are found extending from the equator to Cape Negro, and on the eastern from Cape Colony to the frontiers of the Galla and Somali country.

They greatly differ from the Hottentots in physical appearance, language, manners, and modes of subsistence. They are described as a fine, athletic race, frequently as handsome as Europeans: they are an agricultural people, tilling the ground, and engaged in pastoral pursuits. The north-east corner of Africa, between the Nile and Red Sea, and from Upper Egypt to the equator, is occupied by what Dr Krapf calls the "Nilotic class of nations," who form an intermediate link between the Syro-Arabian and Negro stocks. This class includes the Somali, Galla, and Afer or Danakil, pastoral tribes, situated to the E., S., and W. of Abyssinia; the Agows, of Western Abyssinia; and the Nubians, of Nubia and Dongola.

Languages.—The Arabic—a Semitic tongue—is the only language presently spoken in Egypt. It is also common in Nubia and many other places. The Mongrebin, a dialect of the Arabic, is spoken by the Moors and Arabs of the Barbary States, while the Berber language forms a connecting link between the Semitic and African families. The languages spoken by the Negro races belong to the Nigro-Hamitic group of Dr Krapf, for which see under "Soudan" and "Guinea."

Religion.—Mohammedanism is almost the sole religion of Northern Africa, with the exception of Abyssinia, where a corrupt form of Christianity prevails, and Algeria, where the French have introduced Roman Catholicism. In the whole of Central Africa paganism of various forms prevails, of which reptile-worship is the principal characteristic. The crocodile and the snake are the gods of many of these nations—a circumstance which seems to connect their worship with that of ancient Egypt. Nowhere do lust and blood reign so arbitrarily as in this region. It was this that rendered the hateful slave trade so common. Yet this race has many amiable characteristics, and not a few of them have embraced Christianity. The Kaffirs and Hottentots are singularly devoid of the religious feeling. The former believe in the existence of a Supreme Being, but they have no form of worship. They practise circumcision, and sacrifice animals to propitiate the spirits of the dead. In Cape Colony, Natal, and other parts of South Africa, Christianity of the Protestant form everywhere prevails.

THE EGYPTIAN EMPIRE.

As the result of numerous conquests during the last few years, the boundaries of the Khedive's empire have been greatly extended in almost all directions. At present they may be stated as follows:—

Boundaries.—N., the Mediterranean; W., Tripoli, the Sahara, and Bagirmi (in Soudan); S., the Niam Niam country, Lake Albert Nyanza, the Equator, and Abyssinia; E., Gulf of Aden, the Red Sea, and Isthmus of Suez.

Thus, besides Egypt Proper, it now embraces Nubia, Kordofan, Bari, and Unyoro (all in the valley of the Nile), together with Darfûr, Dar

Fertit, and Wadai in Nigritia, and the entire western coast of the Red Sea and Gulf of Aden, as far south as Zeyla. In lat. it extends from the equator to the par. of 31° 35′, and in lon. from 15° to 44° E. Khartûm, the cap. of Nubia, situated nearly in the exact centre, is in the same latitude as Goa, Rangoon, Guatemala, Cape Verd, and nearly on the same meridian as the Great Pyramid of Jeezeh.

Area and Population.—No approach to accuracy can be made as yet in regard to either the area or population. Five years ago the former was understood to amount to 660,000 sq. m., and the latter to 7,405,000 persons; but since the recent acquisitions of territory, both of these results must fall far short of the truth, and we may not be very wide of the mark if we give the area as 900,000 sq. miles, and the population as 10,000,000; or seven times the area of the British Isles, with one-third their population. This allows only eleven persons to the sq. m. But Egypt, the principal part of the empire, really consists of the Delta and the very narrow valley of the Nile, while all the other territories of the empire are the abodes of a half-civilised and degraded population.

Political Divisions.—Egypt Proper, the principal section of this wide territory, extends from the Mediterranean to the first cataract of the Nile, and is subdivided into three provinces—Lower, Middle, and Upper Egypt. Nubia begins where Egypt ends, and consists of Lower Nubia and Sennàr. Kordofan lies S.W. of Nubia; while Darfûr and Wadai, formerly portions of Soudan, lie still further west, but still in the Nile basin. The last section of the Khedive's dominions is Samara, on the Red Sea, recently wrested from Abyssinia.

LOWER EGYPT.—Cairo 350, Alexandria 212, Rosetta 15, Tanta 30, Damietta 37 (Nile), Port Saïd 7, Ismaïlia 20, Suez 15 (Suez Canal).

MIDDLE AND UPPER EGYPT.—Jeezeh, Metrahenny, Medinet-el-Faium 5 n., Beni-Souef 5, Siout 25, Girgeh 7, Koneh 5, *Ruins of Thebes*, Esneh 4, Assouan (Nile), Kosseir 2 (Red Sea), El-Khargeh 6 (W. Desert).

NUBIA AND SAMARA.—Der 3, Ipsambul, Khartûm 50, New Dongola 6, Berber 9, *Merôe*, Shendi 10 (Nile), Sennàr 9 (Blue Nile), Ismaïlia or Gondokoro (White Nile), Suakin 8, Massowah 8 (Red Sea), Zeyla (G. of Aden).

KORDOFAN, DARFUR, AND WADAI.—El-Obeid 20 (Oasis), Kobbe 6, Warra 50 (see. p. 474).

Descriptive Notes.—**Cairo** (El Kahireh of the Turks), the cap. of Egypt and the largest city in Africa, was founded by the Saracens A.D. 969. The streets are narrow, and the houses are built of sun-dried bricks, but the numerous mosques and minarets give the city an imposing appearance from a distance. It is a place of great trade, sending caravans to Sennàr, Darfur, and Fezzan. **Alexandria** derives its name from Alexander the Great, who founded it B.C. 332. At one time the proud cap. of the East and the second city of the Roman empire, it is still a place of great importance, and, next to Cairo, by far the most populous city in

Egypt. It is an important station on the overland route to India, being connected by rail with Suez. Here was executed the Septuagint translation of the Old Testament (about B.C. 284), and here was collected the most famous library of the ancient world, which was partly destroyed by accident during the war with Julius Cæsar, and the remainder by Caliph Omar in A.D. 640; and here in 1801 the French were defeated by Sir Ralph Abercromby, who was mortally wounded in the engagement. Alexandria is the birthplace of Euclid, the celebrated mathematician, B.C. 300, of Apollos, the eloquent Jewish Christian, and of many other eminent men. **Rosetta**, at the mouth of one of the branches of the Nile: near it, in 1799, was discovered the famous Rosetta stone, with a celebrated trilingual inscription (dated B.C. 196), which has formed the key to the deciphering of the Egyptian hieroglyphics, and which is now deposited in the British Museum. **Tanta**, on the Damietta branch of the Nile, and on the line of railway between Alexandria and Cairo, is noted for its great religious *fêtes*. **Damietta**, the third principal port of Egypt, was long noted for its manufactures of leather and *dimity*. **Port Said**, a flourishing seaport town at the northern entrance of the Suez Canal. **Ismailia**, near the centre of the Suez Canal, and the principal place along its line, is rapidly rising into importance. **Suez**, at the southern termini of the canal and railway, though always an important place from its position on the highroad between Europe and the East, is doubtless destined to become greater still. **Jeeseh**, a small town on the left bank of the Nile, nearly opposite Cairo, and celebrated for its proximity to the principal pyramids of Egypt;* here was fought the "Battle of the Pyramids" in 1798, in which Napoleon defeated the Mamelukes. **Metrahenny**, a village built on the ruins of the ancient Memphis. **Medinet-el-Fayoum** (Arsinoè) is noted for its distilleries of rose water. **Siout** (Lycopolis), the cap. of Upper Egypt, and the largest town south of Cairo. **Assouan** (Syenè), a little below the first cataract of the Nile, was a place of prime importance in the geography and astronomy of the ancients, as it lay under the Tropic of Cancer, and was therefore chosen as the place through which they drew their chief parallel of latitude. At the summer solstice the sun was vertical here at noon. **El-Kargeh**, cap. of the great oasis, is a station for caravans between Egypt, Darfur, and Central Africa. **Derr**, cap. of Lower Nubia, is an assemblage of mud-built huts, surrounded by palm-groves, which produce dates of a superior quality. **Ipsambul**, a place remarkable for containing two of the most perfect specimens of Egyptian rock-cut temples, containing statues and sculptures erected by Rameses the Great. **Khartum**, cap. of Sennàr, is the residence of the Egyptian governor, and formerly the great depot of slaves sent from Soudan and Abyssinia into Egypt. **New Dongola** has an indigo factory belonging to the pacha of Egypt; it is a military depot, and a place of considerable trade. **Berber**, the rendezvous of the slave merchants from Sennàr and Khartum. **Meroe**, a dilapidated town situated among the ruins of the ancient city of same name, on the east bank of the Nile, where are still seen numerous pyramids more or less in a state of decay, but of the greatest antiquarian importance, as setting at rest the question whether the ancient civilisation of Ethiopia proceeded up the Nile from Lower Egypt, or down the river from Ethiopia. "Here," says Lepsius, "I was fully convinced that I had before me, in this the

* For a minute account of the principal scientific discoveries made by Professor C. P. Smyth and others from a careful study of the Great Pyramid, see an elaborate paper by W. Petrie, Esq., in the author's 'Facts and Dates,' p. 124-136. Edinburgh: W. Blackwood & Sons. Second edition 1870

most celebrated spot of ancient Ethiopia, nothing but the ruins of comparatively recent art. The representations and inscriptions leave not the least doubt on the subject; and it will be for ever in vain to attempt the support of the much-loved idea of an ancient Meroë, glorious and famous, the inhabitants of which were the predecessors and teachers of the Egyptians in civilisation, by referring to its monumental remains, which are in no case earlier than the first century before Christ." **Shendi**, a caravan station, has a semi-weekly market for live stock, wheat, cotton cloth, salt, and senna. **Sennar**, the former cap. of the province of same name, has manufactures of arms, hats, leather, sandals, iron-ware, and jewellery. **Suakin**, the only harbour in Nubia, is the place of embarkation for pilgrims bound for Mecca. **El-Obeid** consists of several villages clustered together in an oasis, and exports gold, silver, ivory, hides, gum-arabic, and slaves.

Surface and Mountains.—The western half of Egypt, from the Mediterranean to the border of Nubia, is known as the Lybian Desert, which is the eastern section of the Sahara, and partakes of most of its characteristics. The Lybian Desert is now known to be from 100 to 150 ft. below the level of the Mediterranean; so that, were a canal cut from the G. of Sidra to this depression, an inland sea, probably equal in extent to the Caspian, would be formed. A long range of low limestone hills, called the Lybian Mountains, runs north and south between this depression and the valley of the Nile, which, with the Delta and a few oases, forms the only cultivable portions of the whole country. A similar range of granitic hills runs along the right or eastern side of the Nile, and called the Arabian Mountains, which are in reality a continuation of the lofty mountains of Abyssinia. The highest summit of the eastern range is Jebel-Lehumah, 9000 ft. above the sea, and Jebel Gharib, 6000 ft. Nubia consists in general of a frightfully arid wilderness, which the Nile cuts in two, forming the desert of Bayudeh in the west, and that of Koroko in the east.

River-System.—The only river in Egypt and Nubia is the Nile, with its two great affluents, the Bahr-el-Azrek (Blue Nile) and Atbara or Tacazze, both of which come from Abyssinia and enter the Nile on its right bank, in Upper Nubia. The Nile is by far the largest of the rivers of Africa, having an extreme length of about 3500 m., and draining nearly one-tenth of the entire area of the continent. In the last 1450 m. of its course it does not receive a single affluent, owing to the sandy and rainless character of its basin. The question of the true source of the Nile has been the grand problem of geographers for ages, and is not yet absolutely set at rest. Much, however, has been recently effected to clear up its mystery (p. 444, 501).

Near Cairo the river spreads out into numerous arms, which enclose the fertile region called the *Delta*, so called from its shape, which is triangular and like the fourth letter of the Greek alphabet. In ancient times there were seven such arms or mouths, but at present there are only two—the Rosetta and the Damietta mouths. It was long supposed that the inundations of the Nile were caused by the melting of the snows

in the Abyssinian mountains; the real cause, however, is now ascertained to be the periodic rains which fall in the tropical regions of this continent between July and September. The waters of the Nile begin to rise at Cairo in June, attain their maximum height in September, and, after remaining stationary for a few days, begin to subside gradually till the end of November. In Upper Egypt, where the valley of the Nile is very narrow, the maximum rise of the water is about 30 ft.; at Cairo, about 24 ft.; but, in the north of the Delta, only about 5 ft. The amount of the rise is a matter of extreme solicitude to the inhabitants, for should it exceed its customary limits by even a few feet, the houses are swept away, the cattle drowned, and incalculable injury effected; while should it come short of its average height, a famine is the inevitable consequence. On the retiring of the waters, the ground is covered with a rich deposit of mud, which is partly composed of vegetable matter, and which imparts an unparalleled fertility to the soil. Much of the subsiding water is retained in artificial canals, which, for the purposes of irrigation, are spread like a network over the Delta and the narrow valley above.

Climate.—The climate of Egypt is extremely dry, the whole country being situated in the great rainless zone of the Old World, which extends from the western border of the Sahara to the eastern limit of the desert of Shamo. It is this fact that mainly accounts for the wonderful state of preservation of the numerous ancient monuments with which the valley of the Nile abounds, some of them being upwards of 4000 years old. Showers of rain fall, indeed, occasionally at Cairo, and more frequently in the lower portions of the Delta, between November and March. In Lower Nubia rain is seldom seen, while in Sennàr it falls only once in two or three years, during the prevalence of the great periodic rains in the upper basin of the Nile. The heat of summer is oppressive, especially in Nubia, owing to the confined position of the inhabited portion and the lowness of the surface. At Cairo the mean annual temperature is 72°.2, winter 55°.5, summer 85°.1. In Nubia the temperature rises from 90° in January to 120° in April. During the spring equinox the country is visited by a pestilential hot wind called the *Khamsim;* and on the subsiding of the waters of the Nile, fatal fevers, ophthalmia, and dysentery prevail over the whole land; but the plague is unknown south of the second cataract.

Geology and Minerals.—The geology of the country is very imperfectly known. Granitic rocks prevail in Egypt, in the hills E. of the Nile, and calcareous strata W. of the river. Each of these has been extensively used in the construction of the pyramids. In Nubia, granite, quartz, sandstone, greenstone, and felspar occur in the western ridges. The metals do not occur in Egypt, but muriate, carbonate, and sulphate of soda are produced in large quantities in the Natron lakes, on the skirts of the Libyan Desert; while salt, marble, limestone, and the red granite called "Syene marble," abound. Emeralds are found in the mountains which line the Red Sea, but the mines are now abandoned.

Botany and Agriculture.—The northern half of Egypt belongs to Schouw's 3d or "Mediterranean Region;" Southern Egypt and the

north of Nubia to his 13th or "Desert Region;" while S. of the 15th parallel, Nubia and Kordofan belong to his 14th region, or "Region of Tropical Africa." Throughout the whole valley of the Nile the flora is very limited as regards the number of species, but those that exist are of surpassing beauty. In Egypt agriculture has in all ages been carried to its highest perfection, the whole agricultural system, however, being regulated by the periodic inundations of the river. In this sense "Egypt is truly the gift of the Nile."

The date-palm of Upper Egypt extends N. as far as Thebes. Among plants peculiar to the country are the papyrus of the Nile (from the cellular tissue of which a kind of paper was anciently made), the zizyphus, and lotus (plants of the buckthorn family). There are no forests, but sycamores and palms are thinly distributed. The fruit-trees are of tropical orders; those of Europe do not flourish. The vine, which was extensively cultivated in ancient times, but extirpated by the Mussulmans, was reintroduced by Mehemet Ali, who also introduced the mulberry-tree. The principal cultivated plants are cotton, lint, hemp, indigo, sugar, tobacco, and opium; the cereals comprise wheat, millet, maize, rice, and durrah—the last mentioned forming, with beans, the main food of the people. Onions, melons, and cucumbers are also extensively raised. In Nubia, the baobab, the largest and one of the most useful of all trees, palms of many species, the ebony-tree, and acacia, the mimosa abound, while the cultivated plants are durrah, barley, cotton, indigo, tobacco, senna, coffee, dates, and the sugar-cane. Agriculture employs most of the population along the banks of the rivers. The valley of the Nile is so narrow as to allow very little space for cultivation, but immense fertile plains occur at the confluence of that river with its affluents: here artificial irrigation is practised as in Egypt.

Zoology.—The principal wild animals in Egypt are the crocodile, ichneumon, jerboa, and fox; the wolf, hyena, and jackal occasionally visit the valley of the Nile, but the hippopotamus has long ago retired to Upper Nubia, and never visits the waters of Egypt except when forcibly borne down by the flood. Reptiles are numerous, especially crocodiles and frogs; while insects embrace the locust and mosquito, the principal scourges of the country. Domestic animals are the same as in Europe, with the addition of the camel and dromedary. Poultry are reared in vast numbers, the eggs being hatched by the heat of ovens, and not by the ordinary process of incubation; but the poultry thus reared are destitute of the instincts which relate to the care of offspring, and hence the artificial method must be persisted in. In Nubia are found apes, baboons, elephants, rhinoceroses, hyenas, gazelles, giraffes, wolves, foxes, and wild-dogs, which are the principal mammalia. Birds comprise the vulture, ostrich, bustard, shrike, thrush, parrot, heron, quail, and Guinea-fowl. The crocodile is the principal reptile.

Ethnography.—From the tenth chapter of Genesis we infer that Egypt was first colonised by the second son of Ham, who gave his own name, Mizraim, to his adopted country. The land of Canaan was doubtless peopled about the same time by Ham's fourth son, Canaan. The eldest son, Cush, with his descendants, settled in

Babylonia, Assyria, and at a much later date in Ethiopia, as the existing monuments at Meroë and other places attest (see above, note on Meroë, p. 452); while Phut and his descendants settled in North Africa, W. of the Nile, where they were early subdued by the Mizraites. These various migrations appear to have taken place, for the most part, immediately after the confusion of tongues, an event which occurred about B.C. 2552. On, or Heliopolis, the first city in Egypt built by the colonists, is believed by Egyptologists to have been erected B.C. 2481. Babylon was founded by Nimrod, son of Cush, B.C. 2534; and Hebron, the first city in Palestine, B.C. 2413. The first king mentioned in history as having reigned over the country is Menes, whom the learned W. Osburn shows to have lived about B.C. 2429, a date corresponding with that of Yao, the Chinese Emperor, and the Median (or first human) dynasty of Berosus, with whom the historical periods of China and Chaldæa respectively commence ('Facts and Dates,' 2d edit. p. 136). The name *Khem*, by which Egypt is denoted on its monuments, is the same as the Hebrew *Cham* or *Ham*. Egypt was the chief primeval seat of the race of Ham, and hence its designation as the "Land of Ham" (Ps. cv. 23). But another branch of the family—viz., that of the Cushites or Ethiopians, rivalled it in power and celebrity; for while one section of the Cushites, under Nimrod, settled in the valley of the Euphrates, another section migrated at a later period to Abyssinia and Nubia.

The modern Egyptians are mainly of Arab descent, but with an admixture of the old Egyptian or Coptic stock, who are generally Christians. The "fellahs," or cultivators of the soil, who form the great bulk of the population, are undoubtedly of Arab descent, professing the Mohammedan religion. Besides these there are many Turks, Bedouins, and Europeans. The inhabitants of Nubia are named Nubians and Kenoos. They are of Bedouin extraction, but considerably mixed with the Coptic or aboriginal inhabitants. Though generally of a dark swarthy complexion, they have neither the negro features nor dark woolly hair; and many of them have the peculiar style of countenance which is often seen in the sculptures of the Egyptian temples. In those sculptures we can see a transition from the regular features and straight noses of the time of Abraham, to the flat nose and thick lips of the age of "the king who knew not Joseph;" and ultimately of the protruding chin of the modern negro.

Language and Religion.—The ancient Egyptian was closely allied in grammatical structure to the Hebrew and Arabic, but glossarially it seems to have formed a connecting link between the Semitic, Indo-European, and African families. It has been extinct for ages, and no literary remains exist to show its true character, except some ancient inscriptions, which, till recently, remained utterly unintelligible to scholars. The Rosetta stone, containing a trilingual inscription, one of which is in Greek, has proved of great service in revealing the contents of the inscriptions; and additional information may yet be obtained from a careful inspection of the dialects into which it was ultimately divided, and in which very ancient translations of the Scriptures have been handed down. These dialects are the *Coptic*, now a dead language, but at one time the

vernacular tongue of all Egypt; the *Sahidic*, anciently spoken in Said or Upper Egypt; and the *Bashmuric*, at one time prevalent in a portion of the Delta. The Arabic is the only language presently spoken in Egypt, while the Mohammedan is the religion professed by the great body of the people, and, next to this, a corrupt form of Christianity termed the Coptic. In Sennâr and Kordofan the inhabitants are chiefly negroes. They are the remnants of a once powerful negro nation who came down the White Nile and subdued the Nubians in 1504. The pastoral tribes of the eastern desert, and those dwelling along the shores of the Red Sea, are of Arab origin. The latter speak the Gheez language, a dialect of the Arabic; derive their subsistence from fishing; and appear to be the same people as the ancient *Troglodytes* or dwellers in caves. The Arabic is the common language, and the Mohammedan the sole religion, of Nubia. Kordofan is peopled by three races—the Nubas or negroes, the original inhabitants; the Dongolani, who at different times invaded the country; and tribes of Bedouin Arabs, from Arabia. Several of the tribes are Mohammedans, but others are still pagans. (See under "Africa.")

Government, Army and Navy, &c.—The Government is a hereditary viceroyalty under Ismail Pasha, a grandson of the famous Mehemet Ali. Egypt being nominally an appanage of the Porte, the viceroy, or "khedivé," as he is now called, cannot conduct diplomatic intercourse except through the Sultan of Turkey. The administration of the country is under a Minister of State appointed by the khedivé, but the Government is practically despotic.

The army, which is raised by conscription, consisted in 1873 of 12,000 infantry, 4500 cavalry, 1500 artillery, besides a regiment of negroes in Nigritia; while the fleet consisted of 7 ships of the line, 6 frigates, and 52 other war-vessels. In 1873 the revenue amounted to £9,911,000; the expenditure to £8,816,000; and the public debt to £56,000,000.

Commerce and Manufactures.—Egypt has recently become again what it was in ancient times—the highroad of commerce between the East and West. This result has been mainly effected by the construction of a railway between Alexandria, Cairo, and Suez, 210 m. in length, and still more by the construction of the great Suez Canal (completed by M. de Lesseps, a French engineer, in November 1869), connecting the Mediterranean with the Red Sea. Beginning at Port Said about 50 m. E. of the Damietta mouth of the Nile, it stretches almost due south by Ismaïlia to Suez, a distance of 100 m. The Canal has a uniform depth of 26 ft., required ten years for its execution, and cost nearly £19,000,000. In 1875 one-half the total number of shares of the Canal Company were purchased from the Khedive by the British Government for £4,000,000 sterling. The commercial intercourse of Egypt with the United Kingdom is now very great, in consequence of these improved modes of transit, nearly all our trade to and from India now passing through Egypt. In 1873, the total number of ships which passed through the Canal was 1171, carrying 2,085,000 tons, of which 810 ships, with a tonnage of 1,500,000 belonged to the United Kingdom. The exports of Egypt to all countries in the same year amounted to £18,752,000, and the imports to £10,632,000. The intercourse with Central Africa is very considerable, and is carried on by means of caravans, which bring,

in exchange for European and Egyptian products, ivory, gold dust, skins, wool, grain, ostrich feathers, metals, and (till recently) slaves. There being no coal nor iron found in the country, the manufactures are inconsiderable, and are confined chiefly to pottery, cotton and woollen cloths made by the natives, carpets, fire-arms, and military accoutrements.

HISTORICAL SKETCH.—Unless we except the valley of the Euphrates and Tigris, this country is the earliest seat of civilisation in the world. Unlike all other lands, we find in Egypt many of the arts and sciences in their utmost perfection upwards of 4000 years ago—a fact which conclusively shows that the earliest condition of the human race was not that of barbarism. For nineteen centuries Egypt was governed by native kings. Menes, its earliest king, began his reign about B.C. 2429, and the line of the Pharaohs ended in the conquest of the country by Cambyses, B.C. 525. It was taken by Alexander the Great, B.C. 332, after whose death it was governed by the Ptolemies till B.C. 30, when it was reduced to a Roman province by Augustus. The Saracens invaded it in A.D. 638, and the Turks in 1163. The government of the Mamelukes was established in 1250, but they were subjected to the Turks in 1517. It was overrun by Napoleon in 1798, who was dispossessed by the British in 1801, when the Turkish government was restored.

ABYSSINIA.

Boundaries.—N.E., the Red Sea; N.W., Nubia; S.W., Kaffa and the country of the Gallas; S.E., the Somâli country. Lat. 7° 30′—16° N.; lon. 34° 40′—40° 30′ E. Gondar, the cap. of Amhara, near the centre of the country, is on the same parallel as Bathurst in Senegambia, Lake Tchad, Aden, Madras, Bangkok, Leon in Nicaragua, and Barbadoes.

Area and Population.—Since the coast region became subject to Egypt, the area is restricted to about 158,400 sq. m., and the population to 3,000,000, being five times the size of Scotland, with about an equal population.

Political Divisions.—The political condition of Abyssinia is of an uncertain character, in many respects resembling that of Europe in feudal times—each chief exercising authority over as wide a district as possible. Notwithstanding the great accessions made to our knowledge of the country during the last few years, the country is still very imperfectly known to Europeans. The following distinct states, however, are known to exist:—Tigrè, in the N., in the upper basin of the Atbara or Tacazze; Amhara or Gondar, in the centre, around Lake Tana or Dembea; Shoa, in the S.E.; and Samara, including the Afar country, now subject to Egypt, in the N.E.

TIGRÈ.—Antalo 8 n. (Atbara), Axum 4 n., Adowa 10 (Marab).

AMHARA.—Gondar 8 n., Kuarata, Zagè (L. Tana), Magdâla (Bashelo).
SHOA.—Ankòbar 15, Angolalla 3 n. (Djimma, *aff.* Blue Nile).
SAMARA.*—Massowa 12, Arkiko Amphilla (Red Sea).

Descriptive Notes.—**Antalo**, a mean wretched place, consisting of about 1000 huts, but possessing some trade and a manufactory of spears. **Axum**, the ancient cap. of the kingdom of Abyssinia, now greatly decayed, contains a Christian church, in which are kept the famous 'Chronicles of Axum,' a copy of which was brought to Europe by Bruce, the Abyssinian traveller. **Adowa**, the chief entrepôt of trade on the great caravan-route between Massowah and Gondar. **Gondar**, cap. of Amhara, the central state of Abyssinia, was formerly very extensive, but has now greatly declined. **Magdala**, a hill fort, on the plateau of Talanta, 9050 ft. above the sea, stormed and totally destroyed by a British force under Sir Robert Napier, April 13, 1868, when King Theodore was slain and the British captives rescued. **Ankobar**, cap. of Shoa, at an elevation of 8200 ft., is considered the healthiest and most agreeable place in Abyssinia. **Massowah**, the largest town in Samara, and the principal seaport town in the whole country: it belongs to Egypt, and is the residence of an Egyptian governor.

Surface and Mountains.—The greater part of Abyssinia forms a lofty table-land, varying from 8000 to 10,000 ft. in elevation, inclining gently towards the west, as indicated by the general direction of the rivers, with a more precipitous descent towards the east, and with abrupt, almost perpendicular, declivities towards the north and south, as the great floods from the mountains during the rainy season pour down towards the Tacazze and Blue Nile, carrying with them all the earth and loose materials which go to form the delta of Lower Egypt. It is traversed in various directions by mountain-ranges, the higher elevations of which frequently rise above the limit of perennial snow, which has here an elevation of 14,000 ft.: Ras Detschen, at the source of the Atbara, 15,986 ft.; Abba Jarrat, between the Atbara and the Guenqua, 15,020 ft.

Climate.—Extremely various—intensely hot in the valleys and on the coast of the Red Sea; cool and bracing on the table-lands; severe cold on the mountains. The periodic rains commence in June and continue till September, during which they are so violent as to put a stop to all out-door operations. The mean temperature of Ankobar is in June 62°, and in January 52°.

Geology and Minerals.—Abyssinia presents the most varied and complex geological aspect imaginable. Sandstone, lying upon schistous rock, forms the principal strata, but contorted and disrupted in extensive localities by basaltic rocks, which form the elevated peaks of the great chain of mountains. The great Tana lake in the centre of the country is compared by recent travellers to a huge crater. The shores, the islands, and the surrounding mountains are all volcanic, basalt being the prominent feature. Extinct volcanoes, hot springs, and repositaries of sulphur, occur in many places. Other minerals are scarce, but comprise coal, iron, gold, silver, antimony, and salt. The iron and salt alone are turned to profitable account.

* This entire province now belongs to Egypt.

The principal salt deposit occurs in the Afar country, between the eastern side of the plateau and the Red Sea, in a depressed plain about 200 ft. below the sea-level.

Botany. — The vegetation of this country belongs in part to Schouw's 12th and in part to his 14th Phyto-geographic Regions. The whole land—whether valleys, plains, or plateaux—is watered by countless streams. The soil, consisting of the detritus of volcanic rocks, is so rich, of such fertility, and enjoying such climatic advantages, that usually three harvests are reaped in the year. The temperate flora extends over a zone from 9000 to 6000 ft., the subtropical from 6000 to 3000, and the dry tropical coast vegetation from 3000 ft. to the sea-level. The forests are magnificent, and contain sycamores of great size, cedars, and beautiful specimens of the acacia. The high plateaux yield luxuriant pasturage. The coffee-plant is indigenous, and, with cotton, grows wild in the mountains. The soil of the lower grounds is extremely fertile, and furnishes, without cultivation, many of the finest vegetable productions of the torrid zone. Fruits are abundant, including the date, orange, lemon, pomegranate, and banana. Other cultivated plants are *teff* (Poa abyssinica), from which is made the usual bread of the people: the wheat and barley are excellent, and are found here in numerous varieties: the sugar-cane is cultivated, but is only chewed, as the art of extracting the sugar is unknown. The vine is reared in some parts, the finest grapes being met with to the east of Lake Tana; myrrh, senna, and other medicinal plants are plentiful.

Zoology.—The wild animals are numerous, and comprise the lion, panther, leopard, wolf, striped hyena, two-horned rhinoceros, elephant, hippopotamus, booted lynx, cameleopard, zebra, quagga, boar, buffalo, antelope, gazelle, and monkey. Birds of all kinds abound, including the ostrich, eagle, vulture, parrot, partridge, quail, and numerous species of water-fowl. Crocodiles and serpents are numerous, and some of them of great size. Bees are much cared for, and some of the provinces pay a large proportion of their tribute in honey. The ravages of the locust are terrible, and an insect called the *saltsalya*, a little larger than a bee, is extremely noxious. Mules, camels, and asses are the usual beasts of burden, the horses being generally reserved for war and the chase.

Ethnography.—The people are principally of Semitic origin, and are probably a colony from Southern Arabia. They comprise some of the tribes called Ethiopians by the ancients, who, though of a dark colour, were conspicuous for the beauty of their type. There are in reality three table-lands, rising one above another, in lines nearly parallel with the coast. The tribes inhabiting these various plateaux, though of the same origin, vary in complexion—those of the coast are black, with long crisped hair; those of the higher table-lands are of a copper or brown olive colour, with regular and well-formed features. The modern Abyssinians are a very motley group of different races, consisting of descendants from the primitive Ethiopic stock; of many Jews settled for ages in the country, and

forming distinct colonies under the name Felasha ("the Exiles"); of a large population of Arabic origin; of Gallas, who have been introduced from the south, extremely barbarous; and of true negroes in a state of slavery.

Languages.—The Ethiopic or Gheez (p. 358) was anciently the only vernacular dialect of Abyssinia, but the Amharic and Tigré, its two modern dialects, are now the only languages known in the country, except the Arabic, which is spoken on the sea-coast, and the Galla, which is not of Semitic origin, on the southern frontier (p. 358).

Religion.—The religion of Abyssinia is for the most part a very corrupt form of Christianity. The Christian religion was established here in the fourth century, but it has long been shorn of its characteristic features. Baptism and the Lord's Supper are dispensed after the manner of the Greek Church. Mohammedanism prevails among the Arab population of Samara, and Judaism among the Jews, who are very numerous in the country. The "Felashas," though Jews in religion and habits, are a native tribe, and not of Hebrew origin. They form colonies in various localities. "Abyssinia is perhaps the only country in which Christianity and Mohammedanism are in contact where the professors of Islam are the more energetic and trustworthy, holding the offices which require fidelity, filling the mercantile stations, and descending to the departments of manual labour, while those who take the name of Christians are drones and beggars."

Manufactures and Commerce. — The manufactures comprise leather, parchment, cotton cloths, tapestry fabricated from wool and goats' hair, and articles of iron and brass. The principal Exports are ivory, gold, slaves, cattle, ghee, dhourra, honey, wax, coffee, musk, frankincense, myrrh, cotton cloth, and mules; and the Imports, lead, tin, copper, silk, cotton, sugar, rice, gunpowder, glass, Indian goods, Persian carpets, French cloths, and coloured skins. Business is chiefly carried on at Massowah, a small Egyptian port on the Red Sea, and is conducted chiefly by barter. The slave trade is actively prosecuted by the Mohammedans on the frontier.

River-System of Egypt, Nubia, and Abyssinia, or the basin of the Nile.—The total length of the river cannot yet be stated, though beyond doubt L. Tanganyika does not belong to its basin. Including the Shibiyu, flowing into L. Victoria, the Nile must have a length including windings of 4000 m., while the area of its basin is believed to amount to 520,000 geographical sq. m. (see above, p. 443).

The following table shows the principal towns in this immense basin (see under "Africa"):—

Rivers.	*Towns.*
Nile,	Damietta, Rosetta, Alexandria, CAIRO, *Jeezeh*, *Metrahenny*, Medinet-el-Faioum, n., *Beni-Souef*, Siout, Girgeh, Keneh, *Ruins of Thebes*, *Esneh*, *Assouan*, Derr, Ipsambul, New Dongola, Berber, *Meröe*, Shendi, Khartum, Gondokoro, *Murchison Falls*, *Ripon Falls*.
Atbara,	Antalo, n.
Marab,	Adowa, Axum, n.
Bahr-el-Azrek,	Khartum, Sennàr, Zage, Kuarata, GONDAR.
Djimma, *l.*	Angollala, n., Ankobar.

BARBARY STATES.

Boundaries.—N., the Mediterranean; W., the North Atlantic; S., the Sahara or Great Desert; E., Egypt.

The Barbary States extend from lat. 21° (Fezzan) to 37° 16′ N. (Biserta, in Tunis), and from lon. 25° E. (Oasis of Siwah) to C. Nun, in Morocco, 11° W. They thus occupy over 16° of lat. and 36° of lon. The length from E. to W. along the 30th parallel is about 1785 m., while the breadth varies from 200 m. on the Egyptian frontier to 750 m. in Tripoli and Fezzan. The coast line is estimated at 2600 m. The city of Morocco, on the central parallel, is in the same lat. as Jerusalem, Ispahan, Lahôr, Nanking, and the head of the G. of California.

Area and Population.—The aggregate area is roughly estimated at 940,700 sq. m., and the population at 11,564,218. The whole area is about seven times that of the British Isles, while the population does not exceed one-third of ours. The area and population of the different states are as follows:—

States.	Area in English sq. m.	Population.
Tripoli, including Barca and Fezzan, .	356,820	1,150,000
Tunis, ...	47,360	2,000,000
Algeria (1867), ...	267,600	2,414,218
Morocco, ...	268,920	6,000,000

Political Divisions.—The Barbary States are four in number—1. Tripoli, in the E., including the province Barca,* and the large oasis of Fezzan in the Desert, termed a *beyalic*, and subject to the Ottoman Porte. 2. Tunis, N.W. of Tripoli, also a beyalic of the Turkish empire. 3. Algeria, W. of Tunis, a colonial possession of France since 1842, and divided into three provinces—Constantine, Algiers, and Oran—but by the natives into the Tell or "country of grain crops," and the Beled-el-Jered or "land of dates;" and, 4. The empire of Marocco, W. of Algeria, consisting of the kingdoms Marocco and Fez, lying between the Atlantic and Mt. Atlas, and the districts Sus, Draha, Tafilelt, and Sejelmessa, lying to the S. and E. of that range.

Tripoli.—Tripoli 30, Derna 6, Bengazi 7 (N. coast), Mourzouk 11 (oasis of Fezzan).

Tunis.—Tunis, 150, Cabes 30, Kairwan 50 n., Biserta 10 (coast).

Algeria.—Algiers 53, Constantine 35 n., Bona 12, Oran 34, Tlemezen 14 n. (N. coast).

Marocco.—Marocco 80 (Tensift), Fez 80, Mekinez 70 n. (Sebou).

* Barca now forms a separate state, cap. Bengazi.

Tetuan 18, Ceuta 8, Tangier 10 (N. coast), Salee 14, Rabatt 40, Mogador 20 (W. coast), Tarodant 21, Tedsi 15 (Sus), Tatta 10 (Draha), Tafilelt 10 (Zaimbi).

Descriptive Notes.—**Tripoli**, properly Tripolis, derives its name from the three ancient Carthagenian cities—Sabrata, Oea, and Leptis Magna. It carries on an extensive commerce with Central Africa by means of caravans. **Mourzouk**, in an oasis of the Sahara, is the last stage for obtaining water and provisions on the caravan-route from Tripoli to Bornou. **Tunis** is the most populous city in Barbary, and, with the exception of Alexandria, the most commercial in Africa. It has extensive manufactures of linen and woollen cloths, marocco leather, and various celebrated essences. About ten m. to the N.E. are the ruins of ancient Carthage, once the proud rival of Rome. **Kairwan**, a large city in a sandy plain at a considerable distance from the coast, was the first seat of Saracenic empire in Barbary; it contains the finest mosque in Africa, and is one of the holy cities of the Mohammedans. **Biserta**, a fortified seaport town, and the most northern in Africa. **Algiers**, cap. of the French dominions in Africa, was seized by the French in 1830, since which it has been strongly fortified; it has now the appearance of a European city, is the residence of the Governor-General of Algeria and of many foreign consuls. **Constantine**, a fortified city taken by the French in 1847, is now a flourishing place, with manufactures of saddlery and other leathern goods. **Oran**, cap. of the most western province of Algeria, was built by the Spaniards, and is surrounded by strong walls and ditches. **Marocco**, cap. of the empire, situated in the centre of an immense plain which extends to the foot of the Atlas range, is ill-built, filthy, and spacious; the walls of the city are six miles in circumference, but many large fields and open spaces strewed with ruins are enclosed within this area. **Fes**, once the cap. of a powerful independent kingdom, and the finest city in western Barbary: though now reduced to the rank of a provincial cap., it remains the holy city of the empire, and one of the three residences of the Sultan. It is the principal seat of the manufacture of marocco leather, which is prepared here in great perfection. **Mekinez**, one of the handsomest towns of Marocco, contains an imperial palace of great beauty and extent. **Tetuan** was ceded to Spain at the close of the recent war with Marocco. **Ceuta**, built on a hill which was known to the ancients as one of the Pillars of Hercules, has belonged to Spain since 1640. **Tangier**, a strongly fortified town, was ceded by the Portuguese to the British in 1662, who retained possession of it for 22 years. **Salee**, formerly noted for its piracy, is now sinking into decay. **Rabatt**, formerly the centre of the European trade with Marocco, exports wool and corn, and has manufactures of carpets. **Mogador**, the principal seaport of Marocco, maintains regular communication with Southern Europe. **Tatta**, a great depôt for the transit trade between Marocco and Central Africa. **Tafilelt**, cap. of a district in the S.E., which is used as a place of banishment for political offenders.

Capes, Islands, Gulfs, Lakes, and Straits.—See under "Africa."

Surface and Mountains.—The western half of the country, from the G. of Cabes to the Atlantic, consists of an elevated plateau surmounted by the three ranges of Mt. Atlas, which run parallel to the Mediterranean and to each other. Of these, the most southerly range, called the Great Atlas, is the loftiest, culminating in Jebel

Miltsin, in Marocco, 11,400 ft. high. In Algeria the highest elevation does not exceed 7700 ft., and in Tunis 4400 ft. From Tunis to the Egyptian frontier the country is low and level, save that gentle eminences extending in an easterly direction attain in the W. of Tripoli a height of about 2000 ft. Between the Atlas range and the Sahara there is a deep depression, to a large extent occupied with salt marshes. The coast region, extending from the G. of Cabes to the G. of Sidra, is very low and sandy, with few harbours; but further east, the plateau of Barca attains a moderate elevation.

Rivers.—Owing to the proximity of the Atlas range, on the one hand to the Mediterranean and on the other to the Great Desert, the rivers of Barbary are all comparatively small. The greater number of them are little more than winter torrents, the channels of which are dry during summer; while those which flow southward soon lose themselves in the sands of the Sahara, or terminate in salt lakes. The only rivers deserving notice are the following:—Medjerda, in Tunis, flows N.E. 200 m., and empties itself into the G. of Tunis. The Shelif, flows N. through Algeria into the Mediterranean. The Mulwiah, the principal river of Barbary, flows N.E. through Marocco into the G. of Melilah. The Omer Begh and Tensift, flow W. through Marocco into the Atlantic.

Climate.—Taking the country as a whole, the climate must be regarded as peculiarly temperate and salubrious. This is especially the case in the coast region between the Atlas range and the Mediterranean, where the sea-breezes are cool and refreshing. South of the Atlas the climate is tropical and the heat intense. Here it scarcely ever rains between March and September, but rain is frequent in winter. North of Mt. Atlas the thermometer rarely falls below 40° Fah. in winter, or rises beyond 85° in summer. In Tunis the mean annual temp. is 68°.7; winter, 55°.76; and summer, 83°. The coast region of Algeria is well adapted to Europeans. Here the summer heat is great, and may be called excessive, the thermometer ranging between 74° and 104°; but, owing to the sea-breezes, even this heat is endurable. The winter temp. at Algiers is from 54° to 65°, and it very seldom reaches the freezing point.

Minerals.—The prevailing mineral in Barbary is salt, which seems to pervade the whole soil, and of which there are innumerable pits, rocks, and springs. Saltpetre is extracted in great quantities; but hitherto coal has not been found in any of the states. In Marocco are found gold, silver, antimony, iron, copper, lead, and tin, but the precious metals are confined to the province Sus. In Tunis, copper, lead, and silver abound, and a quicksilver mine is wrought at Porto-Farina. Iron, copper, and lead are abundant in Algeria, especially in the province Oran, where cinnabar or sulphuret of mercury is obtained in small quantities, besides extensive mines of nitre, salt, talc, and potters' clay; while amethysts of great size and beauty are found in the recesses of the mountains. The Atlas range contains copper, iron, lead, antimony, and rock-salt; but few mines are wrought to advantage.

Botany.—The whole of Barbary is included within Schouw's third phyto-geographic or Mediterranean Region. (See p. 82.)

The northern slopes of Mt. Atlas are clothed with dense forests of pine, oak, cork, white poplar, and wild olives. On the southern slope the lower ranges are covered with palm-trees, especially the date-palm, of which this is the true native region, whence it is denominated by the natives *Beled-el-Jered*, or "land of dates;" higher up grow gum-trees, almonds, olives, &c.; while on the table-lands are found pears, apples, cherries, and other European fruits. The lotus and cassob are indigenous in Tripoli. The principal cultivated plants are wheat, maize, barley, millet, sorghum, tobacco, cotton, indigo, sugar-cane, henna, and saffron; with olives, dates, grapes, and the fruits of Southern Europe. The soil in the valleys has been always celebrated for its fertility, and in some places yields three crops of corn in the year; but so little is agriculture understood that large crops of corn are sometimes allowed to remain unreaped, while at other times many of the inhabitants die of famine.

Zoology.—The animal kingdom comprises most of the species found in the rest of Africa, except the hippopotamus, rhinoceros, giraffe, zebra, and several species of monkeys. (See under "Africa," art. 16.)

The principal mammals are the Barbary ape, little baboon, panther, lynx, jackal, genet, Barbary squirrel, Barbary mouse, Barbary antelope, Marocco antelope, bearded sheep, the bubalis (a species of buffalo), wild-boar, and the Egyptian jerboa. The Atlas Mountains are infested by large fierce lions, and abound in antelopes, monkeys, and porcupines. In general the *Mammalia* differ widely from those of Europe; while, in regard to *Birds*, besides several found in Southern Europe, Barbary possesses numerous species not occurring in any part of the northern continent. The *Reptiles* comprise the chameleon and leathery turtle. Among *Domestic Animals* may be mentioned the horse, camel, dromedary, ass, mule, buffalo, ox, merino sheep, and goats. The merino sheep is a native of Algeria. The goats of Marocco are highly valued, as it is from their skins that the famous "marocco leather" is made. The Barbary horses are superb animals, vieing with the Arabian in beauty of form, though not, perhaps, in fleetness. The dromedary is the most general beast of burden.

Ethnography.—Long before recorded history—perhaps even before the full formation of their distinctive languages—that family of mankind from which the Semitic tribes have come poured forth its hordes from Asia over the northern portion of Africa. Of these, one tribe, the Berbers, with the tenacity of the Semitic stock, has held possession of the valleys of the Atlas under all the successive waves of conquest which have passed over Northern Africa. The colonies and conquests of the Phœnicians, the Romans, the Byzantines, the Vandals, and the Arabs, have not destroyed or absorbed this tough and warlike people. Pressed further to the south by the fierce attacks of the Arabs, in the first half of the eleventh century, they could not be driven from the desert; and they now hold a larger extent of territory than is occupied by any other race on African soil. From the Atlantic Ocean, on the west, their tribes extend to the borders of Egypt on the east, and from the Atlas chain on the

north over the oases of the Great Desert to the region of the Niger and Soudan on the south.*

Language and Religion.—The Berber language—in some respects a connecting-link between the Semitic and African families—is a direct descendant from the ancient Libyan; and the antique bi-lingual rock-inscriptions in Northern Africa show that not only the idioms, but many of the letters used by the Numidians, are still employed by the modern Berbers. Their other letters are Arabic. The Moors and Arabs speak a dialect of Arabic called the Mongrebin, or Moorish Arabic. Islamism is the sole religion of the Berbers, Moors, Turks, and Arabs. The negroes, who are very numerous, and mostly slaves, are generally pagans, Soudan being their native country.

Government, &c.—Marocco is an empire ruled over by a sultan, who is more despotic than is usual in Mohammedan countries. It consists of the two kingdoms, Marocco and Fez, and four territories, above mentioned. The army consists of about 20,000 men, besides a sort of militia, formed of negro slaves, numbering about 80,000 more. The navy, at one time very formidable to European merchantmen, is now insignificant. Algeria has been a French colony since 1842, though its subjugation commenced 12 years earlier. The administration is chiefly military, but in the larger towns a civil system has been established. As yet the efforts of the French to render this a prosperous colony have been, on the whole, unsuccessful, and it may be questioned whether they will not ere long have to abandon it. Tunis and Tripoli form two states of the Ottoman empire. The former is nearly independent, the government being vested in the Bey, who holds his power by hereditary right. The governor of Tripoli holds the title, rank, and authority of a pasha of Turkey.

Industry and Commerce.—Barbary is, next to Egypt, the most favoured and fertile country in Africa, producing corn and wine in abundance, together with tropical fruits of every description—the latter forming an important article of commerce. Great quantities of grain and olives are produced on the northern slope of the *Atlas* range, while the southern is celebrated far and wide as the land of dates.

The Berbers, or original inhabitants of the country, and who now are chiefly confined to the mountains and the Sahara, cultivate the soil with great industry. The Kabyls, or Berber tribes of the mountains, are well versed in agriculture and in the manufacture of arms and gunpowder. The Berbers also form the great media of commerce, their caravans constantly plying between the coast region and Soudan through the Sahara. The Arabs, on the contrary, are a nomadic people, owning large flocks of sheep, goats, camels, and horses. Marocco leather is made in large quantities in the towns, as also woollen and cotton fabrics. Silk and woollen stuffs are made in Tunis; saddlery, carpets, Fez-caps, and earthenwares in Marocco. The principal exports of the country are grain, fruits, wool, cattle, ivory, ostrich feathers, madder, saddlery, and marocco leather; also horses (here called barbs), indigo, wax, tin, and coral.

* 'The Races of the Old World,' by Charles L. Brace. London, 1863; pp. 171, 172.

SAHARA, OR THE GREAT DESERT.

Boundaries.—N., Barbary States; W., the Atlantic Ocean; S., Senegambia and Soudan; E., the Egyptian territories.

The Sahara extends from lat. 16° to 33° N., and from lon. 17° W. to 30° E. Its length from Cape Blanco on the W. to the 30th meridian on the E. is about 3000 m.; its breadth varies from 1000 to 1200 m.; while the area is probably about 2,436,510 sq. m., or twenty times the area of the British Isles; while its population is variously estimated from 1,000,000 to 4,000,000. Its central point (lat. 24½°, lon. 10° E.) is occupied by a table-land 4000 ft. in elevation, and lies on the same parallel as Assouan, Karachi, Murshidabad, Amoy, La Paz in Lower California, and C. Sable in Florida.

Surface.—The Sahara is the most extensive desert on the earth's surface. For hundreds of miles the eye only meets with bare sands in flats and hillocks, or with naked, rocky tracts, destitute of vegetation, and seldom exhibiting any of the forms of animal life.

Till the recent discoveries of Barth and other travellers, very erroneous notions prevailed respecting the configuration of this region. It was represented as a monotonous, low-lying plain, covered almost throughout with loose sand. It is now ascertained to be an immense table-land, with an average elevation of from 1000 to 1500 ft., and surmounted in many parts, especially in the central and eastern portions, by minor plateaux, which not unfrequently attain to a height of from 4000 to 5000 ft. The only extensive low ground in any way connected with the desert is that which separates it from Marocco, Algiers, and Tunis, and which extends from the G. of Cabes to the confluence of the Draha with the Atlantic—a distance of about 1400 m. This immense valley, covered with salt lakes and rivers flowing towards them, attains no greater elevation than from 500 to 1000 ft.; Lake Tchad, also, in the centre of the continent, and at the opposite frontier of the desert, is only 830 ft. above the level of the sea. The minor plateaux which surmount the great table-land, and which must have stood out as islands when the vast region around them formed the bed of the ocean, run in the same direction as Mt. Atlas in Barbary, and the Kong Mountains in Nigritia. This, it will be observed, is the direction of the greatest breadth of the continent, and of the great mountain-systems of Asia and Europe.

The Oases.—The Sahara also abounds in low fertile tracts named *oases*, which are watered by perennial springs, and which not unfrequently support a numerous population. In general, they consist of the deep depressions which separate the lofty plateaux, and are therefore more numerous in the centre and east than in the west of the desert. The following are the principal oases:—

EASTERN SAHARA.—*Ghadames* 7, S.W. of Tripoli; *Fezzan*, S.E. of Tripoli, cap. Mourzouk (see under "Tripoli"); *Siwah*, in the Libyan Desert, cap. Siwah-el-Kebir; *Tibesti*, S.E. of Fezzan; *Bilma*, midway bet. Fezzan and Lake Tchad; *Air* or *Asben*, W. of Bilma, cap. Agades; *Ghat*, W. of Fezzan.

WESTERN SAHARA.—*Tuat*, midway bet. Cape Nun and Mourzouk, principal towns Agably and Insalah; *Hahirah*, S.E. of Tuat; *Gualata*, S.W. of Tuat; *Toudeni*, S.E. of Gualata, cap. Teeg: *Arowan*, midway bet. Toudeni and Timbuctu.

Descriptive Notes.—**Ghadames**, with about 3000 inhabitants, lies on the caravan route from Tunis and Tripoli to Timbuctu. This handful of people, secluded from the world, consists of two parties, as distinct and hostile as the rival factions of the Italian cities in the middle ages. They never intermarry. They occupy separate apartments, and never pass from the one to the other if it can possibly be avoided; but the market-place is common ground, together with the house of the native governor, and they unite against a common foe. The only explanation they can give of this remarkable feud is: "The Ben Weleed and the Ben Wezeet are people of Ghadames who have quarrelled from time immemorial: it was the will of God they should be divided, and who shall resist His will?" **Agades** has a population of 7000, and some leather manufactures: it is one of the most commercial entrepôts of Central Africa, being on the caravan route from Mourzouk to Sokoto. This oasis is reported to be 11 days' journey in extent from N. to S., and to be fruitful and well cultivated, producing maize, vegetables, and senna. **Agably**, about 700 m. N.W. of Timbuctu: here meet the caravan routes from Morocco and Tripoli, and afterwards diverge to Senegambia and Timbuctu: it has trade in grain, cattle, and sheep. There are two great caravan routes across the desert—one from Marocco to Timbuctu, by Tuat; and the other from Mourzouk to Agades, where the routes diverge westward to Timbuctu, and southward to Sokoto on the Niger. Caravans travel at the rate of 3 m. an hour for 6 hours daily, and generally require about 47 days from Mourzouk to Agades, including long rests at the principal wells.

Climate and Natural Products. — Notwithstanding the extreme heat, which is almost insupportable by day, there is often great cold at night, and ice is frequently formed, owing to the excessive radiation.

Rain falls in torrents at very distant intervals, in some places not oftener than once in ten or twenty years, though there are not wanting evidences of its having been at one time more frequent. Even dew is unknown, owing to the ascending currents of heated air, which dissolve the vapours and disperse the passing clouds. The desert is also visited by a burning wind from the S. and E. called the *simoom*, which generally lasts ten or twelve hours, when the air is impregnated with fine sand, which almost suffocates the traveller; and the drought is so great as to dry up the water contained in the skins carried by the camels.

The only valuable mineral found in the desert is salt, vast rocks of which occur in its W. division. Palm-trees grow on the borders of the Sahara; and the chief products of the oases are dates, gum, corn, and some vegetables. These require constant irrigation,—water being usually found by digging a few feet below the surface. The fauna of the Sahara is as deficient as its flora; the lion, panther, hyena, and some other wild animals, roam over the outskirts; the ostrich and gazelle penetrate farther into the interior; the land-tortoise is common in the S., where it attains to a great size; and lizards and serpents are numerous. The only beast of burden is the camel.

Ethnography.—Two nations of Berber origin, but divided into

numerous tribes, are scattered over the entire desert—viz., the Tibboos in the E., and the Tawareks in the W. (see under "Africa," art. 17). The inhabitants of Ghadames form a subdivision of the Tawarek branch; but Fezzan is chiefly peopled by Arabs, Moors, and negroes. Mohammedanism is the only religion tolerated. Dialects of the Berber language—Tibboo, Tawarek, and Ghadami—are spoken by the Berber tribes; but Arabic, the language of the Koran, and that which is indispensable to African commerce, is also widely prevalent (see under "Barbary").

SENEGAMBIA.

Boundaries.—N., the Sahara; W., the Atlantic; S., Liberia and Upper Guinea; E., Soudan or Nigritia.

Including the British settlement of Sierra Leonè, this ill-defined country extends from lat. 7° 30′ to 17° N., and from lon. 7° to 17° 30′ W. The term Senegambia properly signifies the region lying between the lower courses of the rivers Senegal and Gambia; but it is now understood to embrace a considerably larger extent of country—viz., from the former river southward to Sherboro' Island and the independent colony of Liberia, while eastward it extends to the sources of the Senegal river, near the 7th west meridian. Bathurst, the cap. of British Senegambia, near the central parallel, is in the same lat. as the southern shore of Lake Tchad, Sennàr, Mocha, Madras, Udong, and St Salvador in Central America.

Area and Population.—The area, including Sierra Leonè, is probably about 250,000 sq. m., or more than twice that of the British Isles, while the population may amount to 12,000,000; but there are no reliable data to enable us to speak with precision of the native states. The British possessions of Gambia and Sierra Leonè alone embrace an area of 489 sq. m., and a population, in 1871, of 52,871 (p. 94). The French possess an area of 250,000 sq. m., and a population, in 1872, of 607,398; and the Portuguese an area of only 28 sq. m., and a population of 8500. The native states are large and populous, Bondoo alone being estimated to contain a million and a half of inhabitants.

Surface and Mountains.—The maritime half of the country is very low and level, but the interior and east are hilly and mountainous. The Fooladoo mountains, in the N.E., separate the basins of the Senegal and Niger, while the Tengui mountains, in the S.E., form the water-parting between the Gambia and the Rio Grande. The elevation of these ranges is unknown, but does not exceed the limit of trees.

Political Divisions. — Besides the settlements of the British, French, and Portuguese, situated on the coast, and on the rivers Gambia, Senegal, and Jeba, there is a great number of small native

states, peopled by tribes belonging to three great nations—viz. the Foolahs in the N.; the Jaloofs in the centre; and the Mandingoes in the S.

NATIVE SENEGAMBIA.—Sedo 6 (Guiloom, *aff.* Senegal), Bulibani 3, Bambouk n. (Falemé), Timbo 9 (Ba-Fing), Warneo n. (Gambia), Kamalia, Kemmoo (Voulima).

BRITISH SENEGAMBIA AND SIERRA LEONE. — Bathurst 7 (Gambia), Free Town 18 (Rokelle), Regent's Town (coast).

FRENCH SENEGAMBIA.—St Louis 15 (Senegal), Ft. Goree (W. coast).

PORTUGUESE SENEGAMBIA. — Bissao 8 (Jeba, an arm of Rio Grande).

Descriptive Notes.—**Sedo**, cap. of Footatoro, on the Guiloom, in a beautiful fertile country, has 6000 inhabitants. **Bulibani**, cap. of Bondoo, one of the most powerful states in Senegambia. **Timbo**, cap. of Footajallon, a place of considerable antiquity, near the head-waters of the Senegal. **Warneo**, cap. of the principal Jaloof state, which contains vast forests of gum-trees, and produces abundance of ivory, skins, and honey. **Kamalia**, cap. of Manding, and **Kemmoo**, cap. of Kaarta, the chief towns of the two principal states of the Mandingoes in Senegambia. **Bathurst**, a seaport town and cap. of the British colony of Senegambia, on the island of St Mary, at the mouth of the River Gambia, exports gum, ivory, wax, hides, gold, tortoise-shell, rice, cotton, teak, palm-oil, and native cloths. The colony is under the jurisdiction of Sierra Leone, and is considered to be the healthiest settlement in Western Africa. **Free Town**, cap. of the British colonial settlement of Sierra Leone, in the estuary of the Rokelle, was founded in 1787, with a view of suppressing the slave-trade in Western Africa. **Regent's Town**, a small settlement of liberated Africans, established in 1813. Christianity was introduced here by a poor German mechanic, named Johnson, who had left England for the colony in 1812, and whose devoted labours have been crowned with remarkable success. In 1855, the population, numbering several thousands, were almost entirely Christians. **St Louis**, cap. of the French possessions, on an island at the mouth of the Senegal river, is the entrepôt of their trade, the principal article of which is gum. **Bissao**, an island and seaport town at the mouth of the Jeba, and the great stronghold of the Portuguese slave-trade.

Climate.—The climate of Senegambia is humid and extremely unhealthy for Europeans—the heat being intense, especially about the end of the dry season. The *Harmattan*, or dry hot wind from the Sahara, destroys vegetation, and cracks all articles made of wood as if they were exposed to the action of fire; but it arrests the progress of disease, and banishes the deadly fevers that prevail in the wet season, which extends from June to October. The climate of Sierra Leone is subject to periodical epidemics, the season from May to November being specially pestilential.

Products.—Bambouk is celebrated for its rich gold-mines. The greater part of the mountains are mainly composed of ironstone, and the natives are acquainted with the art of extracting the metal.

Some of the more useful trees are the magnificent baobab or bread-fruit tree; the shea or butter tree; the mimosa, from which the gum-Senegal is obtained, and which forms the most important export of the country, together with teak, mahogany wood, and palm, from which palm-oil is produced. The coffee plant has been introduced by the British at Sierra Leonè, and the Portuguese have introduced the vine, fig, lemon, and citron; and the principal cultivated plants comprise maize, rice, millet, yams, bananas, indigo, and cotton. The elephant, hippopotamus, lion, leopard, panther, striped hyena, buffalo, wild-boar, deer, antelope, and monkeys, are the principal wild animals. Alligators frequent the rivers, boas the marshes, and turtles the islands. Locusts, bees, and ants are extremely numerous.

Ethnography.—Senegambia contains three prominent tribes, two of which are of the deepest interest to the ethnologist—viz., the Fĕllatah, in the N.; the Mandingoes, in the S.; and the Jaloofs or Jolofs in the centre. These tribes, however, are not confined to Senegambia, but are spread over Western Soudan and Upper Guinea.

The Fĕllatahs, or Foolahs, deserve the most special attention, as being not only the most widely spread, but also as being greatly superior in intelligence and civilisation to all the other intertropical tribes of Africa, unless, indeed, we except the Mpongwe of Lower Guinea. The Fĕllatah are described by travellers as a people conspicuous for their noble bearing, their fine, regular, and apparently Aryan features, and a remarkably light colour of complexion, resembling the rich brown of the Spaniards or Portuguese. They lead a nomadic life, and are engaged in manufactures and commerce. "This people," says Brace, in his 'Races of the Old World,' "are interesting to the student of history, as having enacted, within this century, on the plains of Africa, something of the part played so formidably by the Arabians in Asia under Mohammed. Uniting under the fanatical leadership of a religious reformer, they have founded a Mohammedan empire the most powerful in the interior of Africa, embracing a territory equal in extent to a tenth of the continent, and as large as a quarter of Europe. It embraces, besides the greater part of Senegambia, the kingdoms of Sokoto, Adamawa, Gando, Mássina, and the lower basin of the Benue or Chadda. As the preachers of Islamism, they have undoubtedly advanced the progress of civilisation among the pagan tribes of Africa; for Mohammedanism restrains to a certain degree brutal passions, does away with human sacrifices, cultivates learning, and substitutes the sense of personal dignity and the belief in an immovable, beneficent Providence, with the feeling of a membership in a vast community of believers, for the low habits, the superstitious beliefs, and isolated selfishness, of pagan tribes. Though the most intelligent of African tribes, they have as yet no native alphabet, and make use of the Arabic for writing. They have made some progress in domestic manufactures, are skilful in the care of cattle, and have never participated in the foreign slave-trade. It is impossible as yet to trace their origin. Some maintain that they are a Malay race; others, with more probability, that they are of Egyptian or Eastern descent." "The Mandingoes are also a civilised race, though inferior to the Fĕllatah,—are of a deep black colour, woolly hair, thick lips, broad flat nose, and tall powerful frame. Their leading men can all read and write Arabic; agriculture is carefully pursued by them; they are expert in weaving

and dyeing cloth, tanning leather, and working iron into various instruments. In religion they are zealous Mohammedans, though a few adhere to the old pagan belief. They have a tradition that their ancestors came from Egypt; and their language is said to have a considerable similarity to the Coptic." It is the most useful to traders along the coast, and is characterised as copious and elegant.

The Jaloofs live principally in the deltas of the Gambia and Senegal. They are mild, hospitable, and trustworthy, but are physically of a low type. They live by the chase, and profess the Mohammedan faith; and their language greatly resembles the Mandingo, the type around which all the other languages of Senegambia cluster.

Commerce, &c.—The British, French, and Portuguese have effected numerous settlements on the coast, each of them having taken possession of one of the three large rivers of the country for the purposes of trade. The English are located on the Gambia and in Sierra Leonè, their principal settlement on the Gambia being Bathurst, from which they export wax, hides, ivory, gold dust, rice, palm-oil, timber, and ground nuts, to the United Kingdom. Their total exports in 1869 amounted to £40,000, while their imports (from Britain) amounted to £49,000, consisting mainly of cottons, arms, tobacco, and iron. Sierra Leonè is the most important English settlement on the west coast of Africa. The exports comprise bennie seed, cocoa-nuts, ginger, ground nuts, gum-copal, hides, palm-oil, and palm kernels, &c.; and the imports, ale, porter, apparel, flour and biscuits, cotton and woollen goods, cutlery, earthenware and glassware, guns and gunpowder, haberdashery, rum, wine, and tobacco. In 1868 the exports to the United Kingdom amounted to £81,000, and the imports from the United Kingdom to £230,000. This commerce is conducted by steamers, four steamers per month leaving the colony, and other four the United Kingdom. The French have numerous forts and settlements along the Senegal, their principal station being St Louis, at the mouth of the river. The chief article of exportation is gum-Senegal, which oozes out of the acacia-tree by cracks produced by the *Harmattan*, a hot wind from the desert. It is chiefly used in printing calico, but is deemed inferior to gum-Arabic. Some of the ivory obtained in the interior is carried to the French settlements, but the greater part finds its way to Bathurst. The Portuguese are limited to Bissao and Jeba, on the Rio Grande, their principal trade consisting of ivory, wax, hides, and some gold, the greater part of which is shipped to England, obtaining in return firearms, powder, iron, tobacco, rum, and cutlery. The great want of the European colonies in this region is, to have a good road opened into the valley of the Niger.

SOUDAN, OR NIGRITIA.

Boundaries.—N., the Sahara; W., Senegambia; S., Guinea and the unexplored countries of Central Africa; E., Kordofan.

Lat. 9° to 18° N.; lon. 10° W. to 28° E. Kuka, near the centre of this immense region, on the S.W. shore of Lake Tchad, lies on the same parallel as Bathurst, Gondar, Aden, Madras, Cambodia, and Leon, the cap. of Nicaragua.

Area and Population.—The area is very uncertain, but, according to the latest authorities, probably amounts to 1,213,000 sq. m., or ten times the area of the British Isles; while the population is estimated at 56,400,000, being less than double that of the United Kingdom.

Political Divisions.—Nigritia is divided into a great number of independent states, the principal of which, so far as known, and proceeding from W. to E., are the following:—

BAMBARRA.—Sego 30, Sansanding 10 (Joliba or Niger).
LUDAMAR.—Benowm n., Yarra (an *affl.* Senegal).
BEROO.—Walet 20 (Gozen Zair, *affl.* Joliba).
MASSINA.—Jenneh 10, Isaca (Joliba).
TIMBUCTU.—Timbuctu 20 n., Kabara (Joliba).
BORGU.—Boussa 12, Kiama 20 n., Wawa 18 n. (Joliba).
YAOURI.—Yaouri (Joliba), Tabra 20, Koolfu 15 (Mayarrow).
GANDO.—Rabba 40, Eyeo 20 (Joliba), Fundah 30 n. (Chadda).
SOKOTO.—Sokoto 80 (Zirmie), Kano 30 (Komaduga).
ADAMAWA.—Yola or Jalo 10 (Chadda).
MANDARA.—Mora n., Delow 10 (Serbeuel, *affl.* Shary).
BORNU.—Kuka 10, Angornu 30, New Birni 10 (Lake Tchad).
BAGIRMI.—Masena (Shary, *affl.* Lake Tchad).
KANEM.—Maoo n., Berri (Lake Tchad).
WADAI.*—Warra 50 n. (Bat-ha, *affl.* Lake Fittré).
DARFUR.*—Kobbe 6 (an oasis in the desert).

Descriptive Notes.—**Sego**, cap. of Upper Bambarra, has numerous mosques, and is the seat of considerable traffic. Near this place Mungo Park first saw the Niger, July 1796. "Here," he writes, "I saw with infinite pleasure the great object of my mission—the long-sought-for majestic Niger, glittering in the morning sun, as broad as the Thames at Westminster, and flowing slowly to the eastward. I hastened to the brink, and having drunk of the water, lifted up my fervent thanks in prayer to the Great Ruler of all things for having thus far crowned my endeavours with success." **Benowm**, a principal caravan station on the route from Senegal to Timbuctu. **Yarra**: here Major Houghton, the African traveller, was killed in 1791. **Walet**, cap. of Beroo, on the caravan route from Benowm to Timbuctu. **Jenneh**, cap. of Lower Bambarra, a large well-built town on an island in the Joliba, and the seat of a great trade. It was visited by Caillié, a French traveller, in 1828. **Timbuctu**, on the borders of the Great Desert, and ten m. N. of the Joliba, at its great bend, is a considerable town three m. in circumference, with eight mosques and 20,000 inhabitants. It is meanly built on a sandy plain, and provisions have to be imported from Jenneh, 300 m. distant. To

* Now tributary to Egypt (see p. 451).

Europeans this is the best-known place in Soudan, having been visited by many travellers. It is the principal entrepôt for the trade between Guinea, Senegambia, and Barbary. **Kabara**, the port of Timbuctu. **Boussa**: here Park was murdered by the natives while descending the river in a canoe, 1805. **Rabba**, a populous town, with an extensive trade in slaves and ivory. **Kano**, cap. of the empire of the Fellatahs, has great trade, and manufactures of silk. **Sokoto**, the most populous and important city in Central Africa, has great trade with Guinea and Tripoli; it has important manufactures of blue cloths, and was the scene of Clapperton's death in 1827. **Yola**, near the Benué or Chadda, about 350 m. above its junction with the Joliba. Dr Baikie was the first European who visited this region; he navigated the river for 400 m. above its confluence with the Niger, and has thus opened a new highway for British commerce, and rendered a service to civilisation which it would be difficult to over-estimate. **Mora**, cap. of Mandara, visited by Barth in his recent travels around Lake Tchad. **Kuka**, the cap. of the powerful kingdom of Bornu. Dr Barth states that it is 900 ft. above the sea-level, and 50 ft. above that of the lake. **Angornu**, the most important town in Bornu, on the margin of Lake Tchad, has a great weekly market, and is the centre of an extensive trade in slaves, cotton, amber, coral, and metals. **Maoo**, cap. of Kanem, a kingdom situated between Lake Tchad and the Sahara. **Warra** is described as large and populous, but it is little known to Europeans. **Kobbe**, in an oasis of the eastern desert, is a place of great resort for caravan merchants.

Surface and Mountains.—Soudan may be provisionally divided into three physical regions—viz., 1. The basin of the Niger as far down as the town of Benin, in the same lat. as the Kong Mountains; 2. The district around Lake Tchad; 3. The unexplored country between Lake Tchad and the Upper Nile.

The first of these, which lies between the Sahara and the Kong Mountains (from 2000 to 3000 ft. above the sea), is for the most part a level plain of moderate elevation, and exceedingly fertile. The country around Lake Tchad is low and level, the surface of the lake being only 830 ft. above the sea. It receives two large rivers, the Yeou and the Shary, and contains many islands which are densely inhabited. The basin of the Chadda, between the lake and the delta of the Niger, is mountainous, Mt. Alantika attaining an elevation of 9000 ft., and Mt. Mindif 6000 ft. The third region, embracing Wadai and Darfur, is very imperfectly known to Europeans, but is said to be hilly and sterile, and to send its drainage to Lake Fittré, which lies east of Lake Tchad. The Niger, Joliba, or Quorra, is the great river of the country, and the second in size in this continent. It rises in the Kong Mountains, due north of C. Palmas, flows W., then N.E. as far as Timbuctu, on the southern border of the Sahara, where it makes a great bend, and finally flows southwards to the G. of Guinea, on nearing which it forms a delta of 240 m. of coast. Its total length, including windings, is about 3500 m. Nearly its entire course has been traced by Park and Lander. It is navigable throughout its entire length, though here and there the navigation is impeded by shoals; but the great obstacle to its becoming the highway of commerce in Western Africa is the extreme insalubrity of the climate.

Climate.—The climate of Western and Central Soudan considerably resembles that of Senegambia and Guinea; that of Eastern Soudan is still very imperfectly known. It is everywhere tropical

and intensely hot, while the year consists of two seasons—the dry or hot season, and the rainy.

The dry season continues from March to June, when the thermometer, at mid-day, stands in the shade at about 107°, and even during the night rarely sinks below 100°. The rainy season commences in June; violent thunderstorms rage, accompanied by heavy rains, cloudy weather, and a damp, sultry atmosphere. The rivers overflow their banks, and inundate large tracts of the country. The mean annual temperature of Timbuctu is 79°, mean winter 68°, and mean summer 83°. According to Denham, the mean annual temperature of Central Soudan is 81°.

Minerals.—The only important minerals occurring in Soudan are iron and gold. The former is obtained from the ironstone so prevalent in all parts of the country. The natives possess the art of extracting the metal, and of converting it into numerous useful implements. Gold-dust is abundant in the rivers, and forms, with iron, the principal article of export across the desert. The caravans bring home, in exchange, salt from the states of Barbary—a commodity which is extremely deficient in all parts of Central Africa.

Botany.—The botany of Central Africa is still very imperfectly known, notwithstanding the great number of travellers that have visited portions of it. In Western Soudan there are no forests, properly so called, but baobabs, sheas, cotton-trees, and nedés are numerous in many parts.

Millet is extensively cultivated, which, with maize and cassava, yields two crops a-year. In Central Soudan trees are scarce, except the palm-oil, cocoa-nut, and india-rubber trees; but other products are extremely various. Wheat succeeds in the more elevated tracts; but the grains generally cultivated are rice, maize, and millet. Cotton, tobacco, and indigo are grown in large quantities, as also yams, sweet potatoes, beans, water-melons, musk-melons, onions, plantains, and bananas. Fruit-trees comprise figs, pomegranates, limes, papaws, sheas, mangoes, &c.: date-trees are common to the E. of Lake Tchad.

Zoology.—The hippopotamus and crocodile are found in great numbers in the Joliba. Among other wild animals are the elephant, giraffe, zebra, lion, hyena, tiger-cat, jackal, leopard, antelope, buffalo, wild-horse, squirrel, monkey, deer, and ostrich; while the domestic animals comprise the camel, goat, sheep, ass, horse, ox, and poultry. Birds exist in great numbers and in boundless varieties; they are often remarkable for the beauty of their plumage, especially the paroquets and humming-birds. The whole region is much infested with noxious and venomous reptiles, and insects of countless species swarm in all directions.

Ethnography.—Soudan has been for ages immemorial the home and headquarters of the negro race: here the black man attains his highest physical development; here his mental and moral qualities are most easily studied; and here is seen the extent to which he has been enabled to go in the march of civilisation, without the teaching and influence of more highly-favoured races (p. 62).

As existing in his own beloved Soudan, the negro is far from being that miserable-looking and degenerate creature which he seems to be when

long subjected to the bondage and inhuman treatment of the white man. Though beyond doubt somewhat inferior to the Caucasian in mental endowments, he is fully his equal in stature and physical strength, while even intellectually he is greatly superior to most of the native races of the other continents, especially those of Australia and America. His moral nature is indeed deeply degraded—a result, however, which is to be attributed more to his religion and geographical position than to any inherent ferocity of disposition. It is only by a stretch of language that the people of Central Africa can be called savages; for though they have not invented the art of writing, and nowhere possess a native alphabet, or even the picture-writing of other semi-civilised nations, they have nevertheless made considerable attainments in other useful arts. Agriculture, for example, is practised over the whole of Nigritia, though the plough is an implement unknown in their husbandry. They irrigate the land by artificial processes; various species of grain are raised; and in some places the produce of the field is stored in large granaries raised on poles as a security from vermin. Oxen are reared in great numbers; cotton is everywhere grown, and indigo of the finest quality is produced in great abundance. Manufactures, though not numerous, are carried on with considerable skill and activity—the most important, by far, being that of narrow cotton-cloth, which is beautifully woven by the women, and very tastefully dyed. They are able, moreover, to extract the iron from its native ore, and to convert it into many useful implements; and they evince skill and taste in the various ornaments of gold which they construct.

Language and Religion.—The languages and dialects are very numerous, but, according to Dr Krapf, they may all be included in what he calls the Nigro-Hamitic group, indicating that they are spoken by such descendants of Ham as are located in the great basin of the Niger (p. 450). The religion of Soudan, formerly a species of Fetishism, and consisting of the worship of the crocodile, is now for the most part Mohammedan. The Fellatahs, Mandingoes, and other tribes who have established their power in Western Soudan, are all Mohammedan, and have imposed their creed on the heathen tribes they have subjugated (see under "Senegambia"). Fetishism, however, is still widely prevalent in the eastern kingdoms. All the tribes, indeed, even when professing Islamism, retain the ancient superstition of the *fetish*, and not unfrequently practise the rite of circumcision.

GUINEA.

THE term Guinea is applied to an immense region of Western Africa extending along both sides of the gulf of that name from the eastern frontier of Sierra Leone to C. Negro. It consists of two great divisions—viz., *Upper Guinea* in the N., between the Kong Mountains and the G. of Guinea, or along the coast from Sherboro' Island to C. Lopez (lat. 9° N.—0° 33′ S.; lon. 12° 40′ W.—12° E.); and *Lower Guinea* in the S., extending from the equator to C. Negro (lat. 15° 50′ S.), having the Atlantic Ocean on the W., and the unexplored regions of Central

Africa on the E. The equator, which separates Upper from Lower Guinea, passes through C. Lopez, L. Victoria Nyanza, the centre of the islands Sumatra and Borneo, Quito, and the mouth of the Amazon.

Area and Population. — Upper Guinea extends from W. to E. about 1800 m.; the breadth, from the Kong Mountains to the G. of Guinea, is about 300 m.; while the probable area amounts to 360,000 sq. m. The length of Lower Guinea from N. to S. is 1140 m.; its maximum breadth, about 300 m.; and its probable area, 312,500 sq. m. The population is extremely uncertain. That of Upper Guinea is estimated at 10,000,000, and of Lower Guinea at 9,057,500. The total area is therefore about 672,500 sq. m., or five times that of the British Isles; while the population does not probably exceed that of England.

Surface and Mountains.—The main feature in the physical geography of Upper Guinea is the chain of the Kong Mountains (p. 440). The coast region between this range and the Atlantic, and extending from Sierra Leone to the Bight of Biafra, is flat, low, and in many places marshy, especially on the Slave Coast, where there are numerous salt lagoons. This plain, which is 1800 m. long, and extends inland for about 80 m., is exceedingly fertile, insalubrious, and covered with luxuriant grass. The shores are low and sandy, and exposed to the violence of the waves. North of the Bight of Biafra and east of the lower Niger the surface is high and mountainous. Here the volcanic group of the Camaroons attain, in Albert Peak, an elevation of 13,000 ft. South of these a moderately-elevated table-land, from 2000 to 5000 ft. high, skirts the coast throughout the entire length of Lower Guinea.

Political Divisions.—The political divisions are fluctuating both in number and extent, and little is known of the country beyond the coast, which is visited by Europeans for the purposes of trade. Different names are applied to different parts of the coast, depending on the articles obtained there for exportation, as the Grain Coast, Gold Coast, Slave Coast, Ivory Coast, &c. The British possessions in Upper Guinea are chiefly Cape Coast Castle, Accra, Elmina, Lagos, together with numerous forts intended for the promotion of commerce and mitigating the inhuman traffic in slaves. The very interesting colony of Liberia, on the Grain Coast, near the British settlement of Sierra Leone, was founded by the American Colonisation Society in 1822, as a retreat for the free negroes of the United States. Its area and population are uncertain, but its seaboard extends along the coast for about 500 m., and it probably contains about 258,000 inhabitants, of whom 8000 are immigrants.

Upper Guinea.

Liberia.—Monrovia 9 (St Paul).

Gold Coast.—Cape Coast Castle 10 n., Elmina 10 n. (Chama), Accra 5 (coast).

ASHANTEE.—Coomassie 18 (Dah), Assinie (Assino).
DAHOMEY.—Abomey 30, Ardra 20 n. (Akini), Whyda 7 (coast).
YARIBA.—Abbeokuta 150 n. (coast), Egga, Kakunda (Niger).
BENIN.—Benin 15, Bonny 20 (Niger), Lagos 6, Badagry (coast).
EGGARAH.—Idda or Attah 8 (Niger).
OLD CALABAR.—Bongo, Duke Town 6 (Calabar).

LOWER GUINEA.

BIAFRA.—Biafra (Donga), Adjumba (Gaboon).
LOANGO.—Loango 15, Mayumba, Cabenda (coast).
CONGO.—San Salvador 20 n., Punto de Lenha (Congo or Zaire).
ANGOLA.—St Paul de Loanda 12 (coast).
BENGUELA.—San Felipe de Benguela 8 (coast).

Descriptive Notes.—**Monrovia**, cap. of the free negro state above mentioned, has now a population of 9000. **Cape Coast Castle**: the English first settled here in 1664, and the settlements now consist of numerous forts along the coast, erected and maintained at an enormous expense, for the purpose of mitigating the inhuman traffic in slaves. **Elmina**, in common with all the other Dutch possessions on the Guinea coast, were transferred to Britain in 1871, so that now the entire coast from lon. 2° 40′ W. to 1° 10′ E. is British. **Coomassie**, formerly cap. of Ashantee, was destroyed by a British force under Sir Garnet Wolseley in 1874. **Assinie**, a fort and factory belonging to France, which exports palm-oil, ivory, and gold-dust. **Abomey**, cap. of the kingdom of Dahomey, is a large populous town, much resorted to by merchants from all parts of Africa, in quest of slaves, palm-oil, ivory, &c., all of which are exported at **Whydah**, 90 m. distant. The inhabitants of Dahomey are extremely barbarous; human sacrifices are practised, and the most absolute and unmitigated tyranny prevails. Clapperton visited **Eyeo** in December 1825, and gives an interesting account of his journey. The king boasted that his wives, linked hand in hand, would reach entirely across the kingdom. **Egga**, a large populous city, 70 m. above the confluence of the Niger and Chadda. **Benin** was at one time the great emporium of the slave-trade in this region: near it, Belzoni, the traveller, died in 1823. **Abbeokuta**, cap. of the kingdom of Yariba, is a walled town, containing about 150,000 inhabitants. The houses are built of mud, without windows, and contain from 10 to 500 persons each. Captain Burton, who visited this town in 1862, represents it as a most wretched place, full of filth and misery of every description. The Church Missionary Society has established a mission here, with a vigorous educational establishment. **Lagos**, ceded to Britain, in 1861, by the native king, together with **Badagry**, promises to be an important centre of commerce and civilisation. **Attah** carries on extensive manufactures in cotton-cloth, tanning, and iron. **Bongo** is the cap. of the kingdom of Old Calabar, but **Duke Town** is the principal seat of commerce. **Loango** is 10 m. in circumference, and contains about 15,000 inhabitants. **Mayumba**, a great slave-market on the coast. **San Salvador**, a large town near the Congo or Zaire, and the residence of a chief who claims supremacy over several petty states in the neighbourhood. **Punto de Lenha**; here are numerous Portuguese, English, and American

cotton-factories. The wild cotton, growing in abundance, is of good quality, and easily separated from the seed. **St Paul de Loanda**, cap. of the Portuguese dominions in Western Africa, has a good harbour, and exports slaves and ivory; cotton is also exported, and its cultivation encouraged by the present governor. **San Felipe de Benguela**, a seaport town, and the Portuguese cap. of Benguela. Its principal inhabitants are slave-dealers.

Climate.—The climate of Upper Guinea is tropical, and not essentially different from that of Senegambia and Nigritia. The coasts are low and unhealthy; the heat very great, though less intense than in the regions farther north.

The year is divided into two seasons—a wet and a dry. In the different parts of Guinea the rainy season occurs at very different periods of the year. In Liberia it lasts from November to May. Farther east, in the Ashantee country, it extends from May till November; while in Lower Guinea it lasts from February to April. During the wet season the quantity of rain that falls is prodigious. It is usually followed by a short foggy season, which is extremely deleterious to human life. At Cape Coast Castle, which is considered the hottest part of the coast of Upper Guinea, the thermometer during the hottest month varies from 85° to 90°. Loango, Congo, and Angola, in Lower Guinea, are reckoned healthy and agreeable, as is also the interior of Benguela; but the maritime regions of the whole of Lower Guinea are very pestilential, owing to the constant evolution of sulphuretted hydrogen gas, given out by the mud and detritus borne down by the rivers.

Products. — The only important mineral production of Upper Guinea is gold, which abounds chiefly in Ashantee. It is found not only in the form of dust, but also in large nuggets, by digging from five to nine feet. Native antimony, used for tattooing, together with natron and salt, are found in Yariba and the Niger valley. In Lower Guinea are found gold, silver, copper, lead, sulphur, petroleum, and near the town of Benguela is a rich mine of saltpetre. The vegetable productions do not differ essentially from those of Nigritia and Senegambia, comprising cereals, yams, manioc, cotton-plant, bananas, oil-palm, butter-tree, sugar-cane, coffee, gum-trees, teak, pepper, and ginger. Lower Guinea is the principal habitat of the gorilla ape (which of all animals most nearly approximates to the human form), the chimpanzee, and the orang-outang.

Ethnography.—The natives are all of the negro race, and generally in a very low stage of civilisation. Their religion consists of various forms of paganism (chiefly Fetishism), except the Mandingo tribes in the extreme W., who are Mohammedans, and certain tribes in Angola and Benguela, who have embraced a spurious form of Christianity from the Portuguese colonists. Slavery and polygamy are everywhere prevalent; human sacrifices are practised by several tribes, and morality is at its lowest ebb.

Though presenting the degraded negro type, with which foreign countries are familiar through the slave-trade, yet they are not among the lowest of mankind, as both agriculture and commerce are pursued to some extent by them. The Veys, who are physically more highly developed than the neighbouring tribes of Upper Guinea, have acquired the

high distinction of having invented an alphabet, which shows great originality. It consists of 200 signs, each of which represents, not a letter, but a syllable. On the Gold and Slave Coasts the people live in square houses two or three stories high. They cultivate the soil skilfully, and have made considerable proficiency in the mechanical arts. The Fantis, one of the tribes on the Gold Coast, have learned to read and write English, and many of them are employed by Europeans as teachers or as clerks in business-houses. They are expert in manufactures, and excel in the construction of musical instruments. Throughout Upper and Lower Guinea various religious and national customs exist which bear a wonderful analogy to those practised among the Jews, such as circumcision, bloody sacrifices, the observance of new moons, the rites of purification, the division of time into seven days, and a belief in demoniacal possession. The native population of Lower Guinea consists of various tribes of negroes, known collectively as the Bunda, who belong to the great South African or Kaffir family—a race widely different in many respects from the negroes of Northern Africa (see under "Languages"). Among the more remarkable of the Bunda nations are the Pangwes, who are the only people of Western Africa that have a circulating medium and do not practise barter; and the Mussorongo and Kabundas, who live near the mouth of the Congo, and are described as skilful mariners and shipbuilders. They have built ships which they have sent as far as Brazil, laden with slaves.

The LANGUAGES are numerous, but those in Upper Guinea may be reduced to five distinct groups or families, which have few characteristics in common. They are usually harsh and abrupt, but energetic and direct. Their vocabulary is small, and the words have but few inflections; while those of Lower Guinea all belong to one family, the dialects of which are spoken throughout all Southern Africa, from the Atlantic to the Indian Ocean, and from the equator to near Cape Colony. This great family, taking the Mpongwee, spoken between the Gaboon and Zaire, as a specimen, is remarkable for its beauty, elegance, and perfectly philosophical arrangement, as well as for its almost indefinite expansibility. It differs essentially and radically from all the languages N. of the equator. The five families of languages spoken in Upper Guinea are the *Mandingo*, spoken from the Senegal river to Cape Mesurado (see under "Senegambia"); the *Grebo* or *Mandoo*, from Cape Mesurado to St Andrews, on the Grain Coast, and embracing the Grebo, Basa, Kru, and other dialects; the *Kwakwa*, along the Ivory Coast, presenting no traceable affinity with any other African tongue; the *Fanti*, including the Ashanti, Dahomey, Popoe, and other dialects, extending eastward to Badagry, where the Yariba commences—a language closely allied to the Mandingo and Haussa, and extending inward a great way along the right bank of the Niger; the *Waree*, extending along the Bight of Benin, and embracing the delta of the Niger.

Commerce and Manufactures.—The main articles exported from the European settlements in Upper Guinea consist of gold (which is obtained in small grains, and also fished up from the beds of the streams), ivory, gum, palm-oil, and cotton. The skins of monkeys, which are very numerous, form an important article of export to England. The slave-trade, at one time the great staple of commerce in Western Africa, is now rapidly decreasing. It is an interesting fact that those settlements of Britain situated on the Gold Coast,

and which were originally occupied as slave-factories, are now maintained as the most effectual check on the slave-trade, not to speak of their being great centres of commerce, civilisation, and Christianity. The influence of the Portuguese, on the contrary, in Lower Guinea, has not been beneficial, mainly on account of the support which that nation has always given to the slave-trade; and since its suppression their settlements have decayed or dwindled away. The Gold Coast is pre-eminently the region of the oil-palm, its product forming a principal article of commerce. The British settlements on the Guinea coast exported to the home country, in 1869, goods to the value of £1,157,749, and imported from Britain various commodities valued at £842,744. The internal commerce of the country, especially in Upper Guinea, is carried on at fairs and the native bazaar, where the women expose for sale innumerable articles, including provisions, hardware, dry goods, earthenware, &c. The provisions embrace cereals of every description, ground-nuts, dried rats, palm-oil, shea or tree-butter (one of the most considerable of the productions of Africa), and condiments of every description. The hardware is usually represented by European cutlery and glass beads; and the dry goods by raw silks, broadcloths, and velvets. The natives manufacture cloths of grass and various fibres. They also have attained considerable skill in the preparation of leather, which they work into saddles, embroidered cushions, and many other articles. The Ashantees excel in the construction of native musical instruments. In most localities the great medium of barter is cowries.

The River-System of Senegambia, Guinea, and Soudan.

Basins inclined to the Atlantic Ocean.

Rivers.	*Towns.*
Senegal,	Ft. St Louis, Timbo.
Gulloom, *l*	Sedo.
Ba Falemé, *l*	Fatteconda. n., Boulibani, Bamboux, n.
Voulima,	Kemmoo, n., Kamalia.
Gambia,	Bathurst.
Rio Grande,	Cacheo, Bissao.
Rokelle,	Regent's Town, Free Town.
St Paul,	Monrovia.
Chama,	Elmina, n., Cape Coast Castle, n.
Dah, *l*	Coomassie.
Akini,	Ardra, Abomey.
Ogun,	Abbeokuta.
Niger or Joliba,	Benin, Bonny, Damuggo, Attah, Kakunda, Egga, Niger—*continued.* Eyeo, n., Rabba, Kiama, n., Wawa, n., Boussa, Yaouri, Timbuctu, n., *Kabara*, Isaca, Jenneh, Sansanding, Sego.
Chadda, *l*	Funda, n., Yola.
Mayarrow, *l*	Tabra, Koulfu.
Zirmie, *l*	Sokoto.
Gozen Zair, *l*	Walet.
Calabar,	Bongo, Ephraim Town.
Donga,	Biafra.
Gaboon,	Adjumba.
Zaire or Congo,*	San Salvador, n., Punto de Lenha.
Coanza,	Copelle, Bihé, n.

Basin of Lake Tchad.

Komaduga,	Kano.
Shary,	Masena.
Serbeuel,	Delow, Mora, n.
Co. L. Tchad,	Kouka, Angornou, New Birni, Berri, Maoo.

* This river, which still remains for the most part unexplored, is beginning to excite great attention, not only in the scientific but also in the commercial

COUNTRY OF THE HOTTENTOTS.

Boundaries.—N., Benguela; W., the Atlantic; S., the Orange River, separating it from C. Colony; E., the Kalahari Desert and L. Ngami.

This country is but little known to Europeans, there being few objects of interest to attract travellers. It is regarded as extending from the Nourse river, in lat. 17° 7′, to the Gariep or Orange, lat. 28° 30′; and from C. Frio, lon. 12°, to L. Ngami, lon. 22° 50′ E.

Area and Population.—These are exceedingly uncertain, the people being barbarous, and the limits of their country being ill defined; but the former is now roughly estimated at 1,000,000 sq. m., and the population at about 10,000,000, being only 10 persons to each sq. m.

Surface and Mountains.—A mountain-range, the central portion of which is known as the Omatako Berg, 8739 ft. in elevation, extends from N. to S. at a short distance from the Atlantic. The coast region consists of a low, sandy, barren, and exceedingly dreary strip of land, said to be wholly uninhabited. The interior is hilly or mountainous, and occupied in part by pastoral and nomadic tribes, who find sustenance for their flocks in the curious knots of tufted grass which here attains to great luxuriance; and in part by settled nations, who cultivate the soil, which in the eastern part of the interior is described as fertile. Rain, however, is of rare occurrence, and the inhabitants suffer greatly for want of water.

Ethnographic Divisions.—As already indicated, this region is peopled by a number of nations of different blood and language. The principal of these are the **Ovampos** and **Damaras**, in the north, from the 17th to the 25th degree of south latitude, and extending eastward as far as Lake Ngami. They are branches of the great Kaffir family which prevails so extensively in South Africa. The Ovampos are an agricultural people, skilled in the working of metals, and are largely engaged in trade between the Portuguese colonies of the coast and the Damaras, who live farther south. They are a superior race, with black, short, crisped hair, and so fond of their country that the Portuguese traders do not consider them profitable slaves, as they are found to sicken and die of home-sickness. The

world. Great hopes are entertained that it will become ere long the great commercial route into the interior of the continent. Unlike the Zambezé, which is not navigable for sea-going ships, owing to the bar at its mouth, the Congo has no bar—having 150 fathoms water at its mouth; it is navigable for large ships for nearly 100 miles (the slave-traders, indeed, report that it is navigable for 600 miles above the rapids); it flows through a rich country, which produces in abundance palm-oil, ground-nuts, copper ore, gum, bees'-wax, lignum-vitæ, and two crops of excellent cotton annually; and, above all, it is vastly nearer England than the Zambezé, while the dangers of the Cape of Good Hope and the Mozambique Channel are avoided.

Damaras or Ovapereros are a pastoral-nomadic people, and live principally on their flocks and herds. Though related to the Ovampos, and speaking the same language, they are greatly inferior to the latter in civilisation. They have no clear idea of a Supreme Being, and suppose a tree to have been their ancestor. They practise circumcision, offer animal sacrifices, and pray to the spirits of the dead. They are constantly at war with the Hill Damaras and the Namaqua Hottentots.

The **Hottentots** occupy the country between the Tropic of Capricorn and the Orange river, and from the Atlantic to the country of the Bechuana in the Kalahari Desert. Formerly, indeed, their locality was to the south of the Orange River, but the progress of the white race is gradually pushing them northwards, though they are still numerous in the northern districts of Cape Colony. This people are supposed to be the oldest in Southern Africa, and are entirely different from the Kaffir family both in *physique* and language. They are an exceedingly degraded race, of a copper colour and low physical development, living side by side with dark races of noble form. They are greatly inferior, for example, to the poorest of the Bechuana tribes, who raise, wherever possible, a few pumpkins, or keep a few goats; while the Hottentots scorn any culture of the ground or care of cattle, and prefer the wild life and the scanty game and vermin (ants, spiders, snails, caterpillars, and dried locusts) which the desert furnishes. The most remarkable of the Hottentot tribes are the Bushmen, who are generally in the condition of the most savage barbarism, living in bushes or in holes in the ground; they are the wild Indians of this continent, are great huntsmen and warriors, but are low in stature, with slight limbs, prominent cheek-bones, depressed profile, protruding lips, flat noses, brown skin, and black woolly hair, which grows in isolated tufts. Their moral condition is exceedingly low, all family ties being disregarded, having no personal names. Such of them as have any religion are Fetishists; but not a few have embraced Christianity. The Hottentot language, properly so called, is now nearly extinct, but it belongs to what is termed the "Click family," characterised by deep aspirated gutturals, harsh consonants, and a multitude of ugly inimitable clicks. Their nouns have a double form for the plural, which so far assimilates them to some Polynesian and North American tongues. Their vocabulary is limited, and possesses certain affinities with the Coptic. The dialect spoken by the Ovampos and Damaras belong, on the other hand, to the great Kaffir family of tongues, which possess considerable melody and precision of expression (see under "South Africa"). The religion of Christ has made considerable progress among these savage tribes, the Wesleyans and other denominations having established missions among them, which have become highly successful.

Towns and Villages.—Properly speaking there are no towns; but villages or *kraals*, formed of a labyrinth of little conical hovels, reared of twigs and earth, or of a few poles covered with skins, are numerous. The principal missionary stations are **Ondurga**, in the Ovampo country; **Damara** and **Wesleyvale**, in the Damara country; and **Bethany** and **Jerusalem**, among the Hottentots.

SOUTH AFRICA.

UNDER this heading we propose to embrace our various South African possessions, the two small native states of Kaffraria and Zulu Land, and the two independent Dutch republics of the Orange River and Transvaal.

Boundaries.—N., the Limpopo River and the Orange or Gariep, the former separating it from the Portuguese possessions on the E. coast, and the latter from the country of the Hottentots and Bechuanas; W., the Atlantic; S. and E., the Indian Ocean. Lat. 21° 40′—34° 50′ S.; lon. 17°—32° 45′ E.

Extending from the Orange River on the Atlantic coast to Delagoa Bay on the Mozambique coast, and from the northern frontier of the Transvaal Republic to C. Agulhas, this region embraces 13° of latitude and nearly 16° of longitude. Pietermaritzburg, cap. of Natal, near the central parallel, is in the same lat. as Coquimbo Bay in Chilé, and the middle of the Argentine Confederation in S. America; but Cape Town, the cap. of Cape Colony, in the extreme south, is situated nearly in the same parallel as Valparaiso, Buenos Ayres, Adelaide, and Sydney.

Area, Population, and Political Divisions.—The area of South Africa, within the above limits, may amount to 428,000 sq. m., and the population to about 2,760,000, of whom nearly 1,000,000 are of European descent, the remaining being natives. About one-half of the whole area and population is under British authority. South Africa may be said to consist of six separate states, two of which (Cape Colony and Natal) are British colonies; other two (Orange Free State and the Transvaal) are independent Dutch Republics; while the remaining two (Kaffraria and Zululand) are governed by native Kaffir chiefs. Cape Colony, with the exception of Griqualand West (formerly part of the Orange Free State) lies south of the Orange River; the Dutch Republics are situated north of the Orange; while Natal and the two ever-diminishing native territories, line the Indian Ocean. The area and population of the different parts of South Africa are as follows:—

STATES.	Area in Square Miles.	Population in 1875.
Cape Colony, with Basutoland, W. and E. Griqualand,	218,410	745,477
Natal,	11,172	293,832
Orange Free State,	44,000	245,000
Transvaal,	118,470	275,000
Native Ter. (Kaffraria and Zululand),	36,000	1,200,000

In all probability the whole of the above will ere long be formed into a confederation of states similar to the Canadian Confederation.

Cape Colony proper (including British Kaffraria) now consists of seven provinces, which are subdivided into 60 counties. The principal towns, with two or three exceptions, are all very small.

W. PROVINCE.—Cape Town 33 (Table Bay), Simon's Town 3 (False Bay), Stellubosch 4, Paarl 4 (inland).

N.W. PROVINCE.—Worcester 4 (Breede), Port Nolloth (N.W. coast).

S.W. PROVINCE.—Swellendam 4 (Breede), George Town 2 n. (S. coast).

MIDLAND PROVINCE.—Beaufort 2 (Gauritz), Graaf Reynet 5 (Sunday).

S.E. PROVINCE.—Graham's Town 7 (Cowie), Port Elizabeth 13, Uitenhage 4 (Algoa Bay).

N.E. PROVINCE.—Fort Beaufort 3 (Kat), Cradock (Great Fish), Colesberg n. (Orange).

E. PROVINCE.—(Brit. Kaffraria).—King William's Town 4, E. London (Buffalo).

Natal.—Pietermaritzburg 3 (Umgeni), D'Urban (E. coast).

Orange Free State.—Bloemfontein 1 (Kaiba, *aff.* Vaal).

Transvaal.—Praetoria 1 (Apis), Potchefstroom 2 (Mooi), Lydenburg n. (Olifant).

Descriptive Notes.—**Cape Town**, cap. of the British possession of Cape Colony, was founded by the Dutch in 1651. Situated on the southern shore of Table Bay, at the foot of Table Mountain, it has all the appearance of a Dutch town, the streets being parallel and crossing at right angles, and always kept extremely clean. The public buildings are numerous, embracing a cathedral, castle, museum, library, and a magnetic observatory, rendered famous by the labours of Sir John Herschell and Professor Henderson. **Simon's Town**, with a naval arsenal and a patent slip, is the residence of the naval commander of the colony. **Port Nolloth**, with a railway 65 m. long to the vast copper deposits at Ookiep. **Graham's Town**, 600 m. east of Cape Town, is an important place, and perhaps the most pleasant residence in the colony. **Port Elizabeth** on Algoa Bay, the principal shipping port for the eastern province, and, next to the cap., the most frequented place in the colony. **Graaf Reynet**, at the foot of the Sneuw-Bergen, is the principal place in the far interior of the colony. **King William's Town**, formerly cap. of British Kaffraria, has the aspect of an English village. **Pietermaritzburg**, cap. of the colony of Natal, situated about 50 m. from the coast, is a small town neatly laid out in the form of a parallelogram. **D'Urban**, formerly Port Natal, on the northern shore of a fine inlet of the ocean, is the only port of the colony, and is fast rising in importance. **Bloemfontein**, cap. of the Orange Free State. **Praetoria**, the seat of government, and **Potchefstroom**, the principal town in the Transvaal. **Lydenburg**, in the vicinity of the gold fields, and on the E. slope of the Drakensberg.

Surface and Mountains.—South Africa embraces two great physical divisions—viz., a belt of coast-land of varying width, and an interior plateau, which forms a part of the great triangular plateau of the continent. Between these principal sections the country consists of a series of terraces, rising from south to north, and separated

from each other by mountain-chains. The only passage from one of these terraces to another is by narrow and difficult mountain-gorges, named *Kloofs*, some of which have been made available for wheeled carriages. These terraces are called *Karroos*, the largest of which—the Great Karroo—is an arid desert 350 m. long, 50 m. broad, and 2000 ft high. The mountain-chains are three in number, and parallel to each other, as also to the S. and S.E. coasts.

1. The *Swellendam Mountains*, of moderate elevation, proceed from Table Mountain, in the Cape district, for 200 m. eastward, and at an average distance of 20 m. from the south coast. Height of Table Mountain, 3582 ft. It owes its name to its peculiar form, which resembles a table in shape, and having a flattened summit. It is often covered with a white mist, locally named "The Table-Cloth." 2. The *Zwarte* or Black Mountains, about 30 m. farther inland, and separated from the former by the plateau of Kannaland. In some places they attain an elevation of 4000 ft. 3. The *Northern Chain*, which forms the water-parting between the basin of the Orange and those of the other rivers of the country, and which is separated from the Zwarte Mountains by the Great Karroo. It receives different names in its course from W. to E., as *Roggeveld* in Tulbagh, *Nieuweveld* in Beaufort, *Sneeuw Berg* in Graaf Reynet, and *Drakenberg* or *Quathlamba*, W. of Natal, where Cathkin Peak, the highest summit of South Africa, rises to a height of 10,357 ft., while Compass Berg, in Graaf Reynet (8500 ft.), is the highest point in Cape Colony.

Rivers.—These are numerous, but being generally very small, and interrupted by rapids and sandbanks, they are not navigable; and their beds being considerably depressed below the general surface, they are ill adapted for the purposes of irrigation, while many of them are quite destitute of water in the dry season. The following are the principal:—

The *Orange River* or *Gariep*, in the N., separating the colonial territory from the interior. Its principal branch, the Vaal, rises in the Drakenberg Mountains, at an elevation of 10,000 ft. above the sea. Great Fish, Nosop, Aintaas, Vaal, and Caledon on its right; and the Great Hartebeest and Brak on the left. *Olifant* or *Elephant* River enters the Atlantic midway between the Orange and Cape Town. The *Breede*, in Worcester and Swellendam, enters the Indian Ocean at Fort Beaufort: it is one of the largest and deepest rivers of the colony, but its navigation is impeded by a sandbank at its mouth. The *Gauritz* separates the districts of Swellendam and George, receiving as affluents the Olifant and Gamka. The *Gamtoos*, in Uitenhage, 200 m. long, receives the Salt River and Kouga. The *Sunday River*, from Graaf Reynet, falls into Algoa Bay. The *Great Fish River*, between Albany and Victoria, and the *Keiskamma*, the *Buffalo*, the *Great Kei*, and the *Tugela*, all flow S.E. to the Indian Ocean.

Climate.—The climate is mild and healthy, but very dry, remarkably free from epidemic diseases, though few of the inhabitants attain to an advanced age. It is particularly adapted to Europeans afflicted with pulmonary complaints. The climate of the Orange Free State and the Transvaal is unrivalled for its salubrity.

On an average about 23 inches of rain fall annually at Cape Town, and 32 inches at Graham's Town; but the interior and W. coast are almost

without a parallel for dryness. In the Great Karroo no rain falls sometimes for three years in succession. Snow falls only on the mountains, the highest peaks of which are covered by it for six months in the year. The entire territory lies between the mean annual isotherms of 64° and 68° Fah. The hottest months are December and January, when the thermometer sometimes rises to 94°; while in the coldest months, June and July, it descends to 57°. At Cape Town the mean annual temperature is 61°.3, mean winter 58°.3, and mean summer 70°. In Natal the temperature is higher and the rain more copious. At Durban the thermometer ranges in summer between 77° and 85°, and from 58° to 70° in winter, while the rainfall amounts to 30 inches. Here thunderstorms are frequent along the coast.

Minerals.—Immense deposits of gold were discovered in 1868 on the Limpopo river, between the Transvaal republic and the Portuguese settlements of Sofala, &c.; they have received the name of the Victoria Diggings: while more recently valuable diamond-fields have been discovered on the Vaal river, in Griqualand West, and in the Orange Free State. Rich copper ore is found near the mouth of the Orange. Coal of good quality has been discovered in Natal and various places of Cape Colony, while iron, copper, and other minerals occur in various localities of that colony. Salt is obtained from salt lakes, the most considerable of which is near Algoa Bay, and a species of soda, found in the Great Karroo, is used for the manufacture of soap.

Botany.—South Africa is comprised within "Schouw's 23d Phytogeographic Region," the flora of which is of a peculiar and varied character, rich in forms, but not luxuriant (p. 55).

Timber is scarce in the west, but increases gradually towards the east; but in Natal large forests of valuable timber abound in the *Kloofs*, and many tracts along the coast are covered with forests of pines and mangroves. It is emphatically the region of *Stapeliæ*, *Mesembryanthema*, and *Ericaceæ* or heaths, the last mentioned being more numerous here than anywhere else. No fewer than 400 species of heath are enumerated in this region. The principal indigenous tree in the vicinity of Cape Town is the Witteboom or Silver Tree, conspicuous for the brilliant silky whiteness of its leaves. Table Mountain is remarkable for the *Disa Grandiflora*, a splendid flowering plant not known to occur in any other locality. There are few native plants useful to man found in Cape Colony, but many such have been introduced, as the European cereals, fruits, and esculent vegetables; also sorghum, batatas, plantains, tamarinds, and shaddocks. The aloe is an important article of commerce. European grains and the fruits of temperate and tropical climes have been successfully introduced. More corn is raised in Cape Colony than is required for consumption; but agriculture is crippled by the Dutch law of succession, which, by dividing a man's property equally among his children, hinders the accumulation of capital. Large quantities of wine, and of what is called brandy, are produced at the Cape; but, with the exception of *Constantia*, the wines are very inferior. This wine is the produce of two contiguous vineyards at the foot of Table Mountain. It is very rich and luscious, and is an important article of commerce. The agricultural products of Natal are rich and varied, including sugar, coffee, indigo, arrowroot, ginger, tobacco, and cotton. The pine-apple ripens in the open air on the coast, but the interior is better adapted for the growth of

cereals. In the Transvaal colony—the garden of S. Africa—wheat grows luxuriantly in the watered districts, tropical fruits flourish, and the country is well suited for the cultivation of coffee, cotton, and the sugar-cane.

Zoology.—Colonisation has driven many of the larger wild animals beyond the north frontier of the British colonies. The lion, hyena, leopard, buffalo, hippopotamus, and zebra, are occasionally seen; the rhinoceros is rarely met with. The elephant has retreated beyond the Gariep, but is still found in the county of Knysna. The ostrich and eagle are the most remarkable of the birds; the secretary or snake-eater is a useful bird of prey, as it feeds exclusively on reptiles; while the honey-guide bird has the faculty of discovering the stores of the wild bees, and is used by the native tribes for that purpose. Snakes are numerous, but not formidable. The boa-constrictor, of a large size, has been killed near Natal, and also a new species of crocodile. Fish are extremely abundant and of numerous species; and during winter, whales, porpoises, and sharks, enter the bays, while seals and penguins frequent various parts of the coast.

Ethnography.—South Africa is inhabited by a great variety of races—Europeans, Kaffirs, Hottentots, Griquas, Basutus, and Malays. The coloured races are the most numerous, and occupy some districts conjointly with Europeans; while in others (as Kaffraria and Zulu Land) they are unmixed and independent.

The Europeans consist for the most part of the descendants of the early Dutch settlers, of British who have emigrated from the mother country, and of a few French and Germans. The Dutch, who form the majority of the white population of Cape Colony, and occupy almost exclusively the Orange River and Transvaal Free States, are commonly called *boers* ("agriculturists"). They have lost much of their ancestral industry and cleanliness, are illiterate, prejudiced, and not always well affected towards the British Government; but they have retained their original language and religion. Their usual avocations are the rearing of cattle and sheep and the cultivation of the ground, while the British are chiefly engaged in commerce and in official situations. The Kaffirs, who give their name to the great South African family of nations, are mainly confined to the eastern districts of Cape Colony, and thence along the coast to Delagoa Bay. They are divided into three branches—the Kaffirs proper, the Zulus, and Fingoes, each speaking a separate dialect of the Kaffir language,—the main representative of the great alliterative family of tongues. The Kaffirs are remarkable for symmetry and beauty, are warlike, intelligent, chiefly pastoral, and live under a patriarchal government. The total number of this race occupying the territory we are describing does not probably exceed half a million. The Hottentots are gradually disappearing before the attacks of civilisation, and are now chiefly found in the N.W. section of Cape Colony, many of them, however, existing as servants to the white population in all parts of that colony. The Griquas are a mixed race of Dutch and Hottentot extraction, and are found chiefly in the Orange River settlement. They speak the Cape Hollandish. The Basutus are also a mixed race of Bechuanas, Kaffirs, and Bushmen. They form the principal race in Basuto Land, now British territory. The Malays, who were introduced by the original Dutch settlers, are numerous in the towns of Cape Colony. The great majority of the people of

the various colonies are Protestants, belonging either to the English Church or to the Dutch Reformed, but Wesleyan Methodists are also numerous. Both Cape Colony and Natal is the diocese of an English bishop. Numerous missionary stations are maintained in South Africa, and very many of the natives have been converted to Christianity. The Moravian Brethren were the first in the field, and they were followed by the London Missionary Society, the Wesleyan Missionary Society, the Church Missionary Society, and the Free Church of Scotland. A complete Kaffir version of the Holy Scriptures has gone forth from the South African missionary press, besides the Bechuana version by the Rev. Robert Moffat, who has for so many years laboured among the Bechuana tribes in the interior. This venerable missionary plunged into the deserts of Africa in 1816, where he found the natives a most degraded and savage race. He went among them as their friend, lived with them as one of themselves, learned their language from their own lips, then gave it back to them in a written form, and has lived to present to them the Word of God, translated and printed and published in South Africa by his own immediate influence. Hundreds and thousands of those people, who were at first astonished at a letter, and thought it a spirit, can now intelligently peruse the sacred volume in their own tongue. In view of such facts as these, are we not warranted in believing that soon "Ethiopia shall stretch out her hands unto God"?

Government, &c.—Cape Colony was discovered by Bartholomew de Diaz, a Portuguese, in 1486, and Cape Town founded by the Dutch in 1651. The colony was taken by the English in 1795, restored to the Dutch in 1802, and finally ceded to England in 1814. Natal was discovered by the Portuguese navigator Vasco de Gama on Christmas Day, 1497, and hence the name *Natal*. The Dutch attempted to colonise it in 1721. It was annexed to Cape Colony by the British Government in 1843, and in 1856 it was erected into a separate and independent colony. The government of Cape Colony is vested in a governor and executive council, appointed by the Crown. There is a legislative council of 21 members, and a House of Assembly of 68. The government of Natal is vested in a lieutenant-governor, aided by an executive and a legislative council.

Commerce and Manufactures.—The settlers at the Cape are chiefly employed in the production of wool and wine, in the breeding of horses, sheep, and cattle, and in agricultural operations. The first is now by far the most important article sent from the colony, the exports having amounted in 1874 to £2,948,000 in value. The next in importance is copper, the exports of which amounted to £321,400; and the third in value is ostrich-feathers, which were valued at £205,600. The quantity of wine exported to Great Britain was, in 1827, no less than 698,000 gallons, while in 1874 it had decreased to 80,000 gallons. Other exports are hides, skins, furs, and horns (which are principally brought from Algoa Bay, and this branch of trade is rapidly increasing), aloes, beef, ivory, argol, dried fish, whale and seal oil, and copper ore. Cape Colony supplies the most valuable ostrich-feathers of commerce, and about £205,000 worth are annually exported to London. Experiments are now being made to domesti-

cate the ostrich on large farms. The total exports to the United Kingdom in 1874 amounted to £3,951,000. The imports consist chiefly of woollens, cottons, hardware, furniture, paper and books, from Britain; piece goods and teak from India; tea from China; and sugar from the Mauritius, &c. The total imports in 1874 amounted to £5,725,000, of which £4,431,000 came from Great Britain. Natal is a very flourishing colony, but as yet it is able to export articles of raw produce only, as wool, sugar, cotton, coffee, hides, ostrich-feathers, arrowroot, &c. Its exports to the United Kingdom in 1874 amounted to £770,500. The imports from the United Kingdom for the same year amounted to £1,122,000, and consisted chiefly of ale and beer, ironmongery, machinery, harberdashery, and cotton and woollen manufactures. In the Dutch republics lying N. of the Orange, ivory, hides, tallow, and ostrich-feathers are the principal articles of exportation.

Inland Communication.—The want of good roads forms a serious drawback to the prosperity of our South African colonies. The agriculturists transport their goods in immense lumbering waggons drawn by oxen, which move at a very slow rate. In the Cape Colony, however, railways are being rapidly constructed. Already there is a line in operation from the capital to Simon's Town; another to Stellenbosch, diverging to Malmsbury, and to Worcester; also from Port Elizabeth to Cradock, with a branch to Graham's Town; and several others in construction. In Natal, too, a commencement has been made.

SOUTH CENTRAL AFRICA.

UNDER South Central Africa we propose to treat of the countries lately explored by Livingstone, situated north of the Orange River, and embracing the Bechuana country, the desert of Kalahari, and the basin of the Zambesé above the Portuguese settlement of Tetè.

Boundaries.—N., the district of the Great Lakes; W., the Portuguese possessions on the west coast of Africa and the country of the Hottentots; S., the Orange River, separating it from Cape Colony; E., Transvaal, Sofala, and Mozambique.

It thus extends from lat. 12° to 29° S., and from lon. 20° to 35° 20' E. Lake Ngami, near the central parallel, is in the same lat. as the island Mauritius, Port Denison in Queensland, New Caledonia, Potosi, and Villa Rica in South America. Its extreme length, from L. Dilolo in the N. to the Orange River in the S., is about 1190 m., and its breadth, on the parallel of L. Ngami, about 870 m.

Area and Population.—There are no exact data for calculating either the area or population; but multiplying the length by the

breadth, the former may be roughly estimated at 800,000 sq. m., or seven times the area of the British Isles. As many portions of this vast region are known to be densely peopled, we may safely estimate the population at not less than 15,000,000, or one-half that of the United Kingdom.

Political Divisions.—The principal political divisions of the vast region above defined are—1. The country of the Griquas or Griqualand West, now forming a dependency of Great Britain (p. 484), immediately N. of the Orange; 2. Country of the Bechuanas proper, N. E. of the Griquas; 3. The Bakalahari, in the desert of Kalahari; 4. The Makololo, in the upper basin of the Zambesé.

Griqua Country.—Griqua Town n. (Orange).

Bechuanas Proper.—Kuruman or New Lataku n., Old Lataku n. (Molopo, *affl.* Orange), Kolobeng n., Shoshong n. (Limpopo).

Desert of Kalahari.—Numerous villages of mud huts, but no towns.

Makololo Country.—Linyanti (Chobe, *affl.* Zambesé), Zumbo, Sesheke, Nariel, Katongo, Shinté, Katema (Zambesé).

Descriptive Notes.—Instead of giving, as usual in this paragraph, notes describing the different towns, we shall better consult the interest of the student by presenting the results of Dr Livingstone's discoveries in this region (in 1852-3), embracing the **Physical Geography, Climate, Natural Products,** and **Ethnography.**

Dr Livingstone started in the beginning of June 1852, on his famous journey, from Cape Town—a journey which extended from the southern extremity of the continent to St Paul de Loando, the cap. of Angola, on the west coast, and thence across South Central Africa, in an oblique direction, to Quillimané, on the channel of Mozambique. He was accompanied by two Christian Bechuanas from Kuruman, and two Bakwain men. This small party was conveyed in a lumbering Cape waggon drawn by ten oxen. His route lay in a north-easterly direction, nearly parallel with a line bisecting the triangular area of Cape Colony; he crossed the Orange River in lon. 24°, near the point at which it receives the Brak on its left. If we suppose this triangular tract of country to be divided into three longitudinal zones, we shall find each of them presenting distinct peculiarities of climate, physical appearance, and population; and if the trisecting lines be produced, these characteristics will be found to be better marked beyond the limits of the Colony than even within it. The eastern zone is often furnished with mountains, well wooded with evergreen succulent trees, on which neither fire nor drought has the smallest effect, and its seaboard gorges are clad with gigantic timber. It is also comparatively well watered with streams and flowing rivers; the annual supply of rain is considerable, and the inhabitants—Kaffirs or Zulus—are tall, muscular, and well made, shrewd, energetic, and brave; in short, fully meriting the character given them of being "magnificent savages." Their splendid physical development and form of skull show that, but for their black skin and woolly hair, they would take rank among the foremost Europeans. The next division—that which embraces the centre of this region—can scarcely be called hilly, for what hills there are are very low. It consists, for the most part, of extensive slightly-undu-

lating plains, with no lofty mountains, only a few springs, and still fewer flowing streams; rain is far from abundant, and droughts occur every few years. Without artificial irrigation no European grain can be raised; and the inhabitants, who are named **Bechuanas**, though evidently of the same stock originally with the Kaffirs, and closely resembling them in being an agricultural as well as a pastoral people, are a comparatively timid race, and inferior to the Kaffirs in physical development. The western division is still more level than the middle one, being rugged only near the coast. It includes the great plain called the **Kalahari Desert**, which is remarkable for little water and very considerable vegetation. The reason probably why so little rain falls in this extensive plain is, that the prevailing winds of most of the interior are easterly, with a little southing. The moisture taken up by the atmosphere from the Indian Ocean is deposited on the eastern hilly slope long before the wind which had transported it arrives at the desert. The first and last of these zones having been described under "Eastern Africa," and the "Country of the Hottentots," we shall confine ourselves here to the great missionary's discoveries in the country of the Bechuanas. The term "Bechuana" is the most generic and comprehensive of all the ethnographic distinctions of Southern Africa, if we except the word "Kaffir," as it includes nearly all the tribes that live between the Orange River on the S. and the Zambesé on the N. Recently, indeed, some of the tribes comprised under this designation have pushed their conquests considerably farther north—*e.g.*, the Makololo, who, under their able chief, Sebituane, have extended their dominion as far as lat. 14° S. In general, however, the Zambesé forms the northern boundary of the Bechuanas. The numerous tribes or nations of which they consist are mainly comprised under the leading divisions of Bakalahari, Makololo, Matabele, Basutos, and Bakoni.

The **Bakalahari** are regarded as the oldest existing division of the Bechuana family of nations. Living immediately north of the Orange River, and confined for the most part to the sterile desert of Kalahari, they form, in all likelihood, the remnants of the first extensive emigration southwards of that family. In point of antiquity, therefore, they would appear to rank next to the degraded Hottentots, who partly live amongst them, and partly lie W. of them, and who are regarded as the aborigines of the country. Formerly they possessed large flocks of horned cattle, of which they were deprived by a fresh migration of their own nation from the north, and driven into the desert, where they live by compulsion and not by choice. They still retain in undying vigour that love of agriculture and domestic animals so characteristic of the Bechuana race. Though confined to the same arid regions with the Bushmen, and subjected to the same climatic influences, they greatly differ from them in language, race, habits, and appearance—a fact which very clearly shows that mere external agencies cannot account for difference of race. They hoe their gardens annually, though the only return they can hope for is a supply of melons and pumpkins, and carefully rear small herds of goats, though they have usually to supply water for them in spoonfuls, or with a bit of ostrich egg-shell, out of small wells dug in the sand. They are a timid race, and in physical development often resemble the aborigines of Australia. They have thin legs and arms, and large protruding abdomens, caused by the coarse, indigestible food they eat. They are greatly tyrannised over by the other Bechuana tribes living near them, and their hard-earned property, consisting chiefly of the skins of animals, is carried off with impunity. Such is their dread of visits from their more warlike neighbours, that they choose their residences far from

water, and hide their supplies of it by filling the water-pits with sand, and making a fire over the spot, so that a stranger can form no conception of the place where the precious fluid is stowed away. The tract of country extending from the Orange River to Lake Ngami, and from 24° E. lon. to near the west coast, has been called a "desert," simply because it contains no running water, and very little in wells. But it is by no means destitute of vegetation; for it is covered with grass and a great variety of creeping plants, besides which there are large patches of bushes and even trees. It is remarkably flat, but intersected in different parts by the beds of ancient rivers; and prodigious flocks of a species of antelope, which require little or no water, roam over the trackless plains. The Bakalahari and Bushmen prey on the game, and on the countless rodentia and small species of the feline race which subsist on these. The quantity of grass that grows in this remarkable region is astonishing. It usually rises in tufts, with bare spaces between, or the intervals are occupied by creeping plants. The number of these that have tuberous roots is very great, and their structure is such as to supply nutriment and moisture, when, during the long droughts, they can be obtained nowhere else. The traveller sees a small plant with linear leaves, with a stalk not thicker than a crow's quill; on digging down a foot or eighteen inches beneath, he comes to a tuber, often as large as the head of a young child; and, when the rind is removed, he finds it to be a mass of cellular tissue, filled with fluid, much like that of a young turnip; while, owing to the depth at which it is found, it is generally deliciously cool and refreshing. The fauna of the Kalahari consists for the most part of small carnivora of the feline tribe, as the jackal, ocelot, lynx, wild-cat, and spotted cat, and occasionally lions, leopards, panthers, and hyenas; the ruminants include the buffalo, eland, gnu, blesbuck, bluebuck, steinbuck, and springbuck. Birds are comparatively few, but include the ostrich and swift; while serpents, which are sometimes of an enormous size, are very numerous. The principal subdivision of the Bakalahari is the Bakwains or Baquena, who are the most commercial tribe belonging to this family. Properly speaking they have no towns, but there are numerous assemblages of huts, ranging in an orderly manner around the central one, which forms the residence of the chief, and they are often moved from place to place as their exigencies require. Many of the people have been converted to Christianity, the principal mission stations being **Kuruman** or **Lattaku**, 630 m. N.E. of Cape Town, with a fine, ever-flowing fountain; and **Kolobeng**, about 230 m. farther N., with a charming climate. Dr Livingstone resided for a time at each of these places, and has imparted to them a classical interest.

Makololo.—These form the most northern division of the great Bechuana family, the Bakalahari being the most southern. They people the country lying between Lake Ngami and the Zambesé, and recently have pushed their conquests beyond that river to latitude 14° S.; but this portion of their territory is principally occupied by the numerous negro or black tribes whom they have subdued, and who are known by the general designation of Makalaka. This conquest took place under Sebituane, the father of their present chief, who is named Sekeletu. His cap., called **Linyanti**, a town of about 7000 inhabitants, stands on the north or left bank of the Chobe, one of the chief affluents of the Zambesé. The other principal towns of the Makololo are **Shesheke**, **Shekhosi**, **Nariel**, **Shinté** or **Kabompo**, and **Katema**, all on the north bank of the Zambesé, and above the Victoria Falls. These towns are not very populous, for, being all situated on artificial mounds in the valley of the river,

to avoid being swept away by its inundations during the rainy season, the sites on which they stand are of necessity very limited. This valley, the upper portion of which is called the Valley of the Barotse, is extremely fertile, and capable of producing two crops in the year. The Makololo cultivate a large extent of land around their villages, and raise great quantities of maize, millet, and native corn (*holcus sorghum*), besides yams, sugar-cane, Egyptian arum, sweet-potatoes, two kinds of manioc or cassave, beans, pumpkins, melons, and cucumbers. Fruit-trees abound, but, not having received any care, the fruit is usually acid. On the banks of the Chobe grow some species of the *Ficus Indica*, acacias of a light-green colour, splendid motsintsella, and the evergreen cypress-shaped motsuri. At the confluence of the Leeba and Leeambye is found a large variety of flowers of great beauty and of curious forms, and in general quite unlike those to be met with south of Lake Ngami. The Papilionaceous family of plants is especially numerous. The grass is so luxuriant, Dr Livingstone says, that in many places it quite conceals his oxen and waggon. Trees of many new species occur. The baobab, the most gigantic form in the vegetable kingdom, together with the banyan, the wild date, the wild vine, and Palmyra, give character to the landscape; while, skirting the margin of the Chobe and many other rivers, are seen forests of tall reeds, and a serrated grass, the edges of which cut like a razor. This region abounds with wild animals, many of them unknown to science. Among the more common species may be mentioned the lion, elephant, hippopotamus, rhinoceros, wild-hog, zebra, giraffe, gnu, tsessebe, leche, buffalo, koodoo, nakong, and antelope. Birds, which are extremely numerous, comprise the turtle-dove, ibis, fish-hawk, plover, white-necked raven, parrots, weavers, francolins, guinea-fowls, iguano, speckled king-fisher, bee-eater, swallow, sand-marten; white pelicans, in flocks of three hundred at a time, following each other in long-extending line; clouds of a black shell-eating bird, called linongolo; snipes, curlews, and herons without number; the stately flamingo, the Numidian crane, gulls, waders, black geese, ducks; kala, ardelta, crow, marabou, and the strange-looking scissor-bill with snow-white breast, jet-black coat, and red beak, sitting by day on the sandbanks, the very picture of comfort and repose. Crocodiles in vast numbers frequent the rivers, with water-turtles of great size. North of the Bakwain country are found occasionally huge land-tortoises, which, with their unlaid eggs, make a very agreeable dish. The serpents attain here an enormous size, and are often highly venomous; while others are harmless and even edible, as the huge python and tari, which not unfrequently are from 15 to 20 feet long. Fish of many species abound in the larger rivers, and during the rainy season are seen descending in immense shoals, especially in the Zambesé and the Chobe. The great scourge of the country is the tsetse fly, whose bite is fatal to the ox, horse, and dog, but perfectly harmless to man and wild animals, as also to the mule, ass, and goat. The climate being tropical, and the country well watered, all nature teems with life; and though the lower grounds are in general unhealthy to Europeans, there are numerous spots in which the white man can reside with impunity. On the whole, the discovery of this immense and fertile tract of country forms the most important contribution to geographical science that has been made in modern times. The great Bechuana family of nations, isolated for ages from the civilised world, and constantly at war with one another, destitute alike of the blessings of Christianity and the use of letters, stand far higher in the scale of humanity than Europeans had previously any conception of.

They have made considerable progress in some of the more necessary useful arts, including that of agriculture; they are favourably disposed towards Englishmen, with whom they are ready to engage in commerce; and, though unusually destitute of the religious feeling, they have evinced the deepest attachment and respect towards the first herald of the Cross that ever visited their long-benighted land.

Later Discoveries.—In the end of 1859, Dr Livingstone, accompanied by Mr C. Livingstone, Dr Kirk, and Mr Rae, traced the river Shiré from its confluence with the Zambesé, a point midway between **Sena** and the apex of the delta, up to its point of departure from Lake Nyassa (signifying "Lake of the Stars"). The southern extremity of the lake is in lat. 14° 25′ S. Its elevation above the sea is much less than that of Lake Tanganyika, the southern end of which is in lat. 7° 30′ S. (see p. 445); but Dr Livingstone could not then positively say whether any, or what, connection subsists between them. Another large body of fresh water, named Lake Shirwa, 90 m. long by 40 broad, is situated a few miles to the east of Lake Nyassa, being separated from it by a narrow isthmus, over which all the trade from the interior to the coast must of necessity cross. It is at this point that Dr Livingstone thinks the exportation of slaves may most easily be checked. At the point of egress from Lake Nyassa, the Shiré is a magnificent river, varying from 80 to 150 yards wide, 12 ft. deep, and running at the rate of 2½ knots an hour. Except for about 33 m. of rapids, it is navigable throughout its entire course, while the adjacent country enjoys a highly salubrious climate, with a soil capable of producing anything that can grow in tropical regions. The natives are intelligent, and actively engaged in agriculture, especially cotton, which the explorers declare is of foreign origin. The worst feature about them is their frequent drunkenness, from the overuse of native beer and Indian hemp. Until slavery, however, is abolished, the resources of the country can be of no use to European nations—all legitimate commerce being effectually paralysed by this master-evil of the African continent.

EAST AFRICA.

UNDER this designation are comprehended all the countries on the eastern coast of the continent lying between Delagoa Bay and the Gulf of Aden.

Boundaries.—It is bounded on the S. by Zulu Land and the Transvaal Republic; on the E. by the Indian Ocean; on the N. by the Gulf of Aden and Abyssinia; and on the W. by the region of the Great Lakes and the unexplored territories of Central Africa. It thus extends from lat. 26° 10′ S. to lat. 11° 53′ N., embracing a coast-line of upwards of 3500 m., with a breadth varying from 200 m. in the S. to 800 m. in the N.

Area and Population.—These, in the present imperfect state of our knowledge, cannot be given with any approach to accuracy; but

multiplying the length by the average breadth, we have an area of upwards of 1,979,425 sq. m.; while the total population may be roughly estimated at 22,000,000.

Surface, &c.—The eastern coast of intertropical Africa strikingly corresponds with the western. On both sides the traveller meets with the same maritime plain of rank and exuberant vegetation, cut by streams disemboguing into the ocean; the same expanse of stony ridges and uplands, running parallel with the coasts, and curiously resembling, both in direction and position, the Eastern and Western Ghâts of the Dakhan; the same diseases, which have the same effect on the European constitution; the same alternation of damp, cold, and depressing heat; the same sensation of invincible languor and oppression. Moreover, the fauna, many of them peculiar to Africa, are identical—lions and leopards, elephants and hippopotami, zebras and buffaloes, giraffes, antelopes, and crocodiles. The ethnographic characteristics are also analogous—the same cruel despotisms, eternal feuds, and bloody rites; the same exports and imports—the one consisting of slaves and ivory, and the other of piece goods and wire, cowries and beads; the same sort of dress—unbleached cotton, skins, or grass kilts; and the same diet—goats' flesh, poultry, river-fish, holcus, manioc, and pulse.

Political and Geographical Divisions.—In the extreme south are the settlements of the Portuguese, whose authority extends from Delagoa Bay to Cape Delgado, where they lay claim to an area of 382,700 sq. m., and a population of 300,000 (?). The greater part of the seaboard N. of the Portuguese dominions is tributary to the Sultan of Zanzibar, whose capital, Shanganny, is situated in the populous island of Zanzibar. His territory on this coast is said to embrace an area of 706,725 sq. m., and a population of 10,000,000. Still farther N. are the Gallas and the Somâli country, extending to the Gulf of Aden—area 890,000 (?), population about 12,000,000.

SOFALA and MOZAMBIQUE.—Sofala 3, Inhambane (coast), Laubo, Sena, Tetè 4, Zumbo (Zambesé), Mozambique 9, Quillimanè (Channel of Mozambique).

ZANGUEBAR. — Shanganny 60 (I. Zanzibar), Quiloa, Mombas, Lamoo, Patta, Juba, Brava 5, Magadoxo 4 (coast), Galwen 10 (Haines).

SOMALI COUNTRY.—Bad (E. coast), Berberah (G. of Aden).

GALLAS COUNTRY.—Melinda (Co. of Zanguebar), Harar (Webbee), Zeyla (G. of Aden),* Bonga (Sobat, *aff.* Nile).

Descriptive Notes.—**Sofala**, cap. of a Portuguese government of same name, is supposed by some to be the Ophir of King Solomon—it being the port of Manica, the best gold country in Eastern Africa. It consists chiefly of mud huts, and is protected by a fort. **Inhambane**, the healthiest of the Portuguese stations in Eastern Africa; it exports ivory and bees'-wax. **Sena** or **Senna**, midway between Tetè and Quillimanè, was the former cap. of the Portuguese dominions in Eastern Africa, but is now in a ruinous condition. It is a slave-mart, and very unhealthy: near

* Zeyla is now claimed by Egypt.

it is the mountain Morumbala, from 3000 to 4000 ft. high. **Tetè or Tettó,** cap. of a Portuguese government, now much declined from its former prosperity, contains a fort with a few guns. Dr Livingstone considers it very healthy. Gold-dust in small quantities is found in the vicinity, together with rich seams of coal and some ironstone. **Mozambique,** a fortified maritime city, and the cap. of the Portuguese possessions in Eastern Africa, is situated on an island near the coast. It exports ivory, gold-dust, and slaves brought down from the regions of the Upper Zambesé. **Quillimané,** cap. of a Portuguese government, was visited by Dr Livingstone in 1856, who describes it as a mere village, extremely unhealthy, being built on a mud-bank and surrounded by extensive swamps and rice-grounds. It contains a fort, and has a trade in gold, ivory, and especially in slaves; coal of good quality is plentiful. **Shanganny or Zanzibar,** cap. of the Sultan of Zanzibar's possessions on the E. coast of Africa, is situated in the populous island of Zanzibar. It contains a wooden fort, and carries on a considerable trade with Arabia and the ports in the Red Sea, exporting ivory, sharks' fins, sandal-wood, amber, shells, and cocoa-nuts. It is indeed the chief market in the world for the supply of ivory, gum-copal, and cloves. It is unhealthy for Europeans, the annual fall of rain being about 167 inches. **Quilos,** on an island off the coast, is the principal town of a province of same name under the rule of the Sultan of Zanzibar. Once an important town, it is now a mere village. **Mombas,** a small town on an island near the shore, was visited by Vasco de Gama in 1497: it is now a missionary station. **Magadoxo,** cap. of a state, which is subject to the Sultan of Zanzibar, is the chief commercial entrepot between Cape Guardafui and the river Juba. **Berberah,** a seaport in the Somâli country, has a great annual fair frequented by merchants from Arabia, India, and other parts of Asia. **Melinda,** a seaport town on the coast of Zanguebar, belongs to the Gallas. **Harar,** the principal place of the Galla country, exports coffee, slaves, gum, and myrrh, by way of its port **Zeyla.** Both are now subject to Egypt.

Capes, Islands, Mountains, Rivers, Lakes.—See under "Africa," p. 440-444.

Climate and Products.—South of the Tropic of Capricorn, or in the region extending from Natal to Cape Corrientes, the climate approaches closely to that of Cape Colony; everywhere else it is tropical, and is characterised by extreme heat, periodical rains, and great insalubrity. The island Zanzibar is noted for its excessive humidity, the annual rainfall amounting to 167 inches. The winds which bring the heaviest rains, and which are named *monsoons*, come from the Indian Ocean, and prevail from April to October (p. 446). The principal minerals hitherto known to exist in this region are gold-dust, which is found in small quantities in Mozambique and Sofala; copper, rich seams of coal, good ironstone, and nitre, in Mozambique; and amber, in Sofala and Zanguebar. The flora of that portion of the mainland which lies S. of the Tropic of Capricorn belongs to Schouw's "*Region of Stapeliæ and Mesembryanthema*," already described under Cape Colony; while the entire intertropical portion, together with the island Madagascar, is included within the 14th region of that naturalist (also named "Adanson's Region"), for the characteristic vegetation of which we refer the reader to "Africa" (p. 447), and to Livingstone's discoveries (p. 495). The fauna does

not differ essentially from that of the basin of the Zambesé already given in full (p. 494). The elephant and lion inhabit the gorges of Mozambique; crocodiles abound in the rivers. For the peculiar zoology of Madagascar, see p. 442.

Ethnography.—The natives of the eastern coast of Africa, and inland as far as the great lakes, are regarded by Burton and Speke as belonging to the great Kaffir or South African family, and as occupying a mean position between the Syro-Arabian races of the Barbary States and the aborigines of Nigritia.

They are closely allied by blood, language, and other analogies, to the natives residing in the basin of the Zambesé; and extend from Cape Delgado to the equator, where they come in contact with the Gallas and Somâli. "They are all," says Captain Burton, "similar in appearance and cognate in idiom, although the difference of vocabulary renders neighbouring tribes unintelligible to each other." The group of dialects spoken by them has been termed the Zangian family of languages, which radically differs from the Syro-Arabian on the one hand, and the Nigro-Hamitic on the other (see p. 450). Interiorly, they extend, according to Burton, into the central regions of intertropical Africa. The Gallas and Somâli belong to Krapf's Nilotic class. Arabs are numerous in the dominions of the Imam of Muscat, while a few Europeans are found in the Portuguese territories. For the Ethnography of Madagascar, see at p. 442.

Commerce, &c.—A considerable traffic in slaves, ivory, and tropical products is carried on with the interior, but the commercial relations are chiefly with Arabia. Shanganny, cap. of Zanzibar, and the residence of its Sultan, is the great mart for the supply of ivory, gum-copal, and cloves. The islands of Zanzibar and Pemba alone produce annually no less than £80,000 worth of cloves. Cloves were introduced into Zanzibar from Mauritius in 1830, and the production here is now so great that the value of the article has been reduced about 70 per cent. The total exports of the former island, in 1863, amounted to £500,000 (embracing, in addition to the above, cocoa-nut oil, seeds, &c.); while the imports (consisting of Indian manufactured goods, beads, arms, &c.) amounted to £550,000. The nefarious traffic in slaves is still vigorously carried on in Mozambique and Sofala, in spite of the endeavours of the Portuguese Government to suppress it. A great trade in slaves, gums, spices, and coffee, is also carried on at Harar, in the country of the Gallas. The island Socotra is famous for aloes, and gives name to the finest aloes of commerce, which is very scarce in England, as the greater part of the extract obtained in Europe under the name of Socotrine aloes is produced at Melinda, on the Zanguebar coast.

REGION OF THE GREAT LAKES.

UNDER this designation we include the upper basin of the Nile and the district around Lake Tanganyika, extending from the

southern frontier of Nubia to the 10th degree of south lat., being the region recently explored by Captains Burton, Speke, and Grant; Baker, Petherick, Stanley, and Cameron.

Boundaries.—N., Nubia and Kordofan; W., the unexplored regions of Central Africa; S., the Basin of the Zambesé; E., Zanguebar and the country of the Gallas: lat. 11° N.—10° S.; lon. 27°—37° E.

It thus embraces 21° of lat. and half as many of lon. The equator, which passes through the centre, cuts C. Lopez in Western Africa, L. Victoria Nyanza, the islands Sumatra and Borneo, Quito, and the mouth of the river Amazon.

Area and Population.—The area may be approximately estimated at 780,000 sq. m., and the population at 10,500,000, or seven times the area of the British Isles, with one-third their population.

Political Divisions.—These cannot be given as yet with any degree of exactitude, owing to our imperfect acquaintance with the country, and the brief sojourn there of the distinguished travellers above named. One of the largest kingdoms in the interior of Africa is Unyamuezi, S. of Lake Victoria Nyanza, of about the same size as Scotland. West of this state, but on the E. side of Lake Tanganyika, is the country of Ujiji. The shores of this lake were surveyed by Lieutenant Cameron in 1874, who found that it has an outlet on its western side, named the Lukuga. This river he has traced to its confluence with the Lualaba, which, he has no doubt, forms the head-waters of the Congo. Between the Lakes Victoria Nyanza and Albert Nyanza are the small states of Uganda, Karague, and Unyoro; S. of the Victoria Lake are Uzinza and Usukuma; and on the E. side, Ururi, Ugeyeya, and Usoga. The E. half of the upper basin of the Nile, as far S. as the equator, has been wrested by Egypt from the Gallas. This powerful and warlike people, after subjugating a large portion of the Somâli country, have penetrated into the interior, crossed the Nile near its sources, and in the rich pasture-lands of Unyoro, between the two great lakes, have founded the great kingdom of Kittara. Here they have lost their religion, forgotten their language, and changed their national name to Wahuma, no longer remembering the name of Gallas. Referring the reader for a description of the head-waters of the Nile, and the lakes forming or contiguous to its source, to the article "Africa" (p. 444), we shall here give a brief epitome of the principal discoveries of Burton and Speke in this region:—

On the 6th of February 1857, Captains Burton and Speke set out from **Pangani**, a populous village at the mouth of a river of the same name, known also as the Rufu, which discharges its waters into the Indian Ocean, opposite the northern end of the island Zanzibar. On the 15th they arrived at **Fuga**, the principal cap. of Usumbara, 37 m. N.W. of Pangani. It is an unwalled town of about 3000 inhabitants, and being 4500 ft. above the sea-level, it enjoys a cool, healthy climate. The houses consist of circular frameworks of concentric wattle rings, covered externally with plantain-leaves, and plastered inside with fine mud. The

people are industrious; the husband and children labour in the fields and tend the cattle, while the women provide wood and water, pound the corn in a mortar, bake the bread, and take care of the young. Both sexes, however, are described as dirty, diseased, and ill fed. The sultan, who is named Kimwere, rules, like African kings generally, by the sale of his subjects. He is a thorough despot, and sells without remorse man and woman, gentle and simple, by families and by villages. He has a body-guard of 400 musketeers; his person is sacred, and even a runaway slave is pardoned if successful in touching his majesty. Having finished this experimental journey, our travellers returned to Pangani, a place of considerable commerce; for besides Zanzibar rafters (which are cut in the river), holcus, maize, and ghee, it exports annually to Zanzibar about 35,000 lb. of ivory, the finest and largest in the world; 1750 lb. of black rhinoceros horn, and 160 lb. of hippopotamus-teeth. On the 26th June 1857, and after the rainy season had terminated, they left Zanzibar on their great journey into the interior. Their party consisted of twelve Biluchis, furnished by the Sultan of Muscat, some negroes who had been slaves, and asses for the transport of goods and for riding. Reaching the mainland at **Bagamoyo** (lat. 6°), at the mouth of the river Kingani, they proceeded along the coast to **Kaole**, 10 m. farther S., and thence westward into the interior. Passing over the low hilly country called M'rima, they entered the coast-range of mountains, here called the Rubeho chain, which rises to a maximum altitude of 5646 ft., with a width of about 90 m., and composed of sandstone and crystalline rocks. Crossing this range through the Gomo Pass, 2200 ft. high, and 120 m. from the coast, they began their descent to the great interior plateau, which is at a much lower level. Travelling over some poor lands, they reached a rich country in which knolls or bosses of granite and basalt rise up like rocks in an ocean. This country is exclusively peopled by negroes, none of whom are Mohammedans, like the Somâlis and trading Arabs of the coast; but, like the negroes described by Livingstone, they have no special religion, trusting solely to good and evil spirits. Such of them as have sultans are on the whole peaceable—firearms being rare among them. Their country produces cotton, tobacco, maize, sweet-potatoes, a great variety of pulses, manioc, yams, plantains, and melons. They have made considerable advances in civilisation, manufacture iron, produce cotton fabrics, have abundance of cows and goats, and live in comparative comfort. The climate, however, is very prejudicial to Europeans: at **Zungomero**, in Khutu, lat. 5° S., and about 200 m. from the coast, Captain Burton was seized with an intermittent fever, which prostrated him for 20 days, and almost every man belonging to his party came by turns asking medicine; but at **Ugogo**, some distance farther to the W., where the elevation is greater, the climate is reported to be clear and healthy. From **Kasé**, in Unyanyembé, a spot where the Arab traders have established a sort of mart, and where articles from the coast are bartered for ivory and slaves, the travellers moved westerly until they reached the long inland mass of water trending S. to N., the name of which is Tanganyika. It was crossed by Speke in the centre, and navigated conjointly with Burton to near its northern end, where it is surrounded by mountains ranging from 6000 to 7000 ft. in altitude. Possessing no known outlet,* its waters are perfectly fresh and agreeable; it abounds in delicious fish, while its banks are grazed by red oxen with stupendously long horns. Oxen, indeed, are common over nearly all the region examined, for the *tsetse* fly, the scourge of the more southern African countries, is here wholly unknown. The western shores of the lake are wild and beautiful, affording many convenient harbours, and requiring but a little art to make it quite a fairy

* But see p. 499.

abode. Strange to say, they found no inhabitants on that side of the lake; but game, hippopotami, buffaloes, elephants, antelopes, and crocodiles, are numerous. Returning to their chief central station in Unyanyembé, Speke left his invalid companion, in order to reach the great lake Victoria Nyanza, the position of which had been pointed out to him by the Arabs, who asserted that it was much longer and larger than Tanganyika, from which it lies in a north-easterly direction, and at a distance of 240 m. The Victoria Lake is situated under the equator, its S. extremity being in 2° 30′ S. lat. It is upwards of 300 m. long, about 90 m. broad, and about 3800 ft. above the sea-level. It is studded with numerous islands, and its waters are sweet and good. It receives a multitude of rivers on all sides, save its N. extremity, at which it discharges its surplus waters by the Kivira (or Masaba), which Capt. Speke believed to be the White Nile. Baker, however, has since proved that the Masaba, after flowing N.W. for about 250 m., enters the N.E. corner of another huge lake, which he has named the Albert Nyanza, in honour of the late Prince Consort; that a short distance from its entrance into the lake, it again emerges as a mighty river, flowing due N.; and that this river is the true White Nile. To Speke, therefore, belongs the immortal honour of discovering the source of this famous river. And not only is the main source of the Nile thus discovered, but we are at the same time supplied with the key that unlocks the kindred mystery connected with that river—viz., its periodical inundations, on which, for ages, so much fruitless conjecture has been expended. The rainy season in the region immediately S. of the two lakes commences on the 15th November, and ends on the 15th May, during which period of six months the rain falls in an almost continuous downpour, flooding all the rivers over an extensive area of country. The Nile begins to rise in Egypt about the summer solstice, and attains its greatest height about the autumnal equinox. Making due allowance for the time required to fill these enormous reservoirs, and for the great length of the journey which their waters must traverse before they arrive in Eygpt, there appears no real discrepancy between the respective seasons of the two phenomena—the rainy season under the equator, and the rise of the Nile in Lower Egypt.

Cameron's Discoveries.—Lieutenant Cameron, who was sent out in search of Dr Livingstone, arrived at Ujiji in February 1874. After a careful survey of the S. and W. shores of Tanganyika, he found, to his great joy, that the lake has an outlet, named the Lukuga, on its western side, about lat. 6° S. He was informed the Lukuga flowed into the Lualaba, which, according to Livingstone, issues from Lake Bangweolo, and proceeds N.W. through Lakes Moero and Kamolonda. Contrary to the belief of Livingstone, Cameron shows that the Lualaba cannot flow into the Nile, inasmuch as the latter, even at Gondokoro, is 500 feet above the level of the Lualaba at Nyangwe. After making this notable discovery, Cameron pursued his course westward through the great valley of the Lualaba, which he describes as a magnificent and healthy country of unspeakable riches, abounding in gold, copper, iron, silver, and coal. He is confident that with a wise and liberal expenditure of capital, one of the greatest systems of inland navigation in the world may be opened up to commerce and civilisation. After innumerable hardships, he arrived at the Portuguese settlement of Loando in December 1875, having journeyed on foot 1900 miles. He has proved three great facts: 1. That the Congo flows out of Tanganyika; 2. That the source of the Nile, as Speke and Stanley have shown, lies far to the N.E.; and 3. That the sources of the Zambesé are close to the head of the Lulua, a tributary of the Congo.

NORTH AMERICA.

1. **Position and Boundaries.** — Including Greenland and Central America, this large division of the globe is bounded on the N. by the Arctic Ocean; on the W. and S. by the Pacific: and on the E. by the Isthmus of Panama, the Caribbean Sea, the Gulf of Mexico, and the Atlantic Ocean. It extends from the 7th to about the 82d degree of N. lat., and from the 20th to the 168th degree of W. lon., thus embracing 75° of lat. and 148° of lon.

North America lies wholly within the northern hemisphere, having its southern extremity within seven degrees of the equator, and its northern within about the same number from the north pole. Of the six great continents of the globe it is the third in size, and the fourth as regards population.

2. **Form, Coast-Line, and Extreme Points.**—The general form of the continental portion is that of a scalene triangle, with the longest side fronting the Pacific, and the shortest the Atlantic. If a line be drawn from C. Prince of Wales in Behring Strait to C. Charles in Labrador, we have approximately the line of the Arctic coast, fronting the N.E. Then if we connect the extremities of this line with Acapulco in Mexico, we shall have the other two sides.

The mainland rarely extends farther north than the 70th parallel, being separated from the great American Archipelago by Hudson Strait, Fox Channel, Gulf of Boothia, Bellot Strait, Franklin Channel, Victoria Strait, Dease Strait, and Coronation Gulf; nor farther east than Cape Charles in Labrador, in lon. 55° 30′ W. Great Salt Lake, near the centre of this area, is on the same parallel of latitude with New York, Madrid, Rome, Constantinople, and Peking; and on the same meridian as Great Slave Lake, Cape San Lucas, and Easter Island in Polynesia. The extreme length, from the Isthmus of Panamá to Cape Lisburn, in Alaska, is about 5600 m.; the extreme breadth, from Cape Canso, in Nova Scotia, to the mouth of the river Oregon, 3120 m. Murchison Promontory, in Boothia Felix, lat. 72°, is the most northern point of the continent; Cape Prince of Wales, in Behring Strait, lon. 168° W., the most western; Mariato Point, in the Bay of Panamá, lat. 7° 11′, the most southern; and Cape Charles, in Labrador, lon. 55° 40′ W., the most eastern. Including the larger indentations, the coast-line is estimated at about 24,000 m., or

1 m. of seaboard for every 365 m. of surface; while Europe has 1 for every 225 m. The Arctic and Atlantic coasts are nearly equal in length, and are alike in having each one great and many smaller indentations. The Pacific coast is much longer, and is unlike the others in having but few indentations, while its solitary inland sea (the G. of California) is narrow, and parallel to the coast.

3. **Area and Population.**—The area is still very uncertain, but, including Greenland, the West Indies, and Central America, it is estimated at 8,591,497 sq. m., or 2½ times the size of Europe, and 70 times that of the British Isles. The population, according to the most recent census of the various states, amounts to 58,900,418, or a little more than a fifth part of the population of Europe, and giving rather more than six persons to each sq. m.

4. **Political Divisions.**—The total number of separate and independent states is about 76; but if we regard the United States, the Mexican Confederation, and the West Indies as one state each, the number will be reduced to eleven. The following table contains the name, position, area, population, capital, and other particulars of the different states:—

TABLE OF NORTH AMERICAN STATES.

NAME AND POSITION.	Area in Eng. Square Miles.	Population at last Census.	Capital.	River, &c., on which the Capital is situated.
British N. America, in the N. of the continent, ...	3,553,484	3,880,131	Ottawa, &c.	Ottawa.
Danish America, N.E. of Brit. N. America,	380,000	9,800	Julianshaab.	S.W. coast.
United States, S. of Brit. N. America,	3,603,884	38,925,598	Washington.	Potomac.
Mexican Confed., S.W. of United States, .	773,125	9,276,079	Mexico.	Lake Tezcuco.
Central America, S.E. of Mexican Confed.—	(188,354)	(2,605,410)		
Guatemala, in the N.W. of Central America, . . .	40,777	1,194,000	N. Guatemala.	Montagua.
San Salvador, S.E. of Guatemala, . .	7,325	600,000	Cojutepequa.	L. Ilopango.
Honduras, N.E. of San Salvador, .	47,091	351,700	Comayagua.	Ulua.
Nicaragua, S.E. of Honduras, . .	58,167	250,000	Managua.	Lake Leon.
Costa Rica, S.E of Nicaragua, .	21,494	185,000	San José.	Rio Grande.
Belize, or British Honduras, N.E. of Guatemala, . .	13,500	24,710	Belize.	Belize.
West Indies, E. of Central America, . .	93,650	4,202,400	Havana, &c.	N.W. co. Cuba.
Total, . .	8,591,497	58,900,418		

are separated from each other by the great central plain already described (p. 504).

THE ALLEGHANIES OR APPALACHIAN CHAIN, 2000 m. in length by about 150 m. in breadth, extend from Point Gaspé in the Gulf of St Lawrence to the State of Alabama, and divide the waters which flow eastward into the Atlantic from the two great basins of the Mississippi and the St Lawrence. Average elevation, about 2500 ft.; highest summits—Mitchell's Peak, in N. Carolina, 6732 ft.; Mount Washington, in New Hampshire, 6428 ft.; Black Mountain, bet. Tennessee and North Carolina, 6707 ft.; and Green Mountains, in Lower Canada, 4000 ft.

THE WESTERN OR PACIFIC SYSTEM, better known as the ROCKY MOUNTAINS, consists of two, and in some places of three, parallel chains, supported by elevated table-lands, and extending in the direction of the greatest length of the continent, from the Arctic Ocean to Lake Nicaragua in Central America. The two principal ranges, with their highest summits, are the following:—1. The **Pacific or Oceanic Range**, extending along the western coast, from Alaska to the peninsula of California, forms the water-parting bet. the Pacific Ocean on the west, and the Youcon and Rio Colorado on the east. Its principal members are: *The Sea Alps* in the north, extending from lat. 60° in Alaska to the mouth of the Frazer River in British Columbia, of volcanic origin, and forming some of the highest summits on this continent,—Mt. St Elias, 17,900 ft., highest in N. America. *The Cascade Range*, from the mouth of the Frazer to Cape Blanco, in Oregon,—Mt. St Helens, N. of the Columbia, the highest summit of the United States, 15,750 ft.; Mt. Hood and Mt. Jefferson, S. of the Columbia, 15,500 ft. *The Sierra Nevada*, extending from Cape Blanco to Cape San Lucas, and separated from the eastern range by the basin of the Rio Colorado,—Mt. Tsashti, in the N. of California, 14,400 ft. 2. The **Rocky Mountain Chain** forms a waving line along the eastern side of the great table-land, from the mouth of the Mackenzie in the Arctic Ocean to near Lake Nicaragua in Central America, and separates the basins of the Colville, Youcon, Frazer, Columbia, and Rio Colorado on the west, from those of the Mackenzie, Saskatchewan, Missouri, Arkansas, and Rio del Norte on the east. Its principal members are: *The Northern Range*, extending from the Northern Ocean to the northern frontier of the United States,—Mt. Brown, east of British Columbia, and the culminating point of British America, 15,990 ft.; Mt. Hooker, 15,700 ft. *The Wind River Mountains*, between Oregon and Nebraska; highest summit, Freemont's Peak, 13,569 ft. *Sierra Verde and Sierra Madre*, in Utah and New Mexico,—Long's Peak, 12,000 ft.; Bighorn, 10,000 ft. *Mountains of Anahuac*, in southern Mexico, extending from east to west across the table-land, and all volcanic,—Orizaba, an extinct volcano, 17,347 ft.; Popocatepetl, formerly regarded as the highest summit of North America, 17,884 ft.; Agua, in Guatemala, 13,000 feet.

10. **River-basins and Capitals.**—All the rivers of this continent belong to four great oceanic basins—viz., those inclining to the Atlantic, to the American Mediterranean (the Gulf of Mexico and Caribbean Sea), to the Pacific, and to the Arctic Ocean. Besides these, there are two continental basins, similar to those of the continents of the Old World—viz., *first*, the Great Basin, in Utah and Nevada, where the table-land is widest: its average elevation is 5000 ft. above the sea, and it occupies an area of more than 300,000 sq. m.: it contains Great Salt Lake (which receives the Bear and the Jordan),

and many others which are salt, and have no outlet. *Second*, a depression in the table-land of Mexico, where it is highest, and where occur L. Tezcuco, which is salt, and four others which are either fresh or brackish. Not a few of the larger river-basins enumerated in the following table contain no capitals, while the area of several others remains undetermined. When the name of the state differs from that of the capital, it is put within parentheses :—

Name of River or Estuary.	Length of Basin in Eng. Miles.	Area in Geographical Sq. Miles.	Capitals of States and Provinces.
1. *Basins inclined to the Atlantic.*			
St Lawrence, ...	1400	297,600	Ottawa (Canada), Montpelier (Vermont), Lansing (Michigan).
Connecticut, ...	280	8,000	Hartford (Connecticut).
Hudson, ...	210	7,000	Albany (New York).
Delaware, ...	290	8,700	Trenton (New Jersey).
Chesapeake, ...	450	12,000	Annapolis (Maryland), Harrisburg (Pennsylvania), Richmond (Virginia), WASHINGTON (U. States).
2. *Basins inclined to the American Mediterranean.*			
Mississippi, ...	1820	982,400	New Orleans (Louisiana), St Paul (Minnesota), Little Rock (Arkansas), Tahleguah (Indian Ter.), Nashville (Tennessee), Indianapolis (Indiana), Frankfort (Kentucky), Columbus (Ohio), Charleston (W. Virginia), Jefferson City (Missouri), Topeka (Kansas), Lincoln (Nebraska), Springfield (Illinois), Des Moines (Iowa), Madison (Wisconsin).
Colorado, ...	900	..	Yankton (Dakota), Helena (Montana), Cheyene (Wyoming), Denver (Colorado), Austin (Texas).
Rio Grande del Norte,	1050	180,000	Santa Fé (New Mexico), Chihuahua.
Santander, ...	245	10,000	Victoria (Tamaulipas), San Luis Potosi, Zacatecas.
Tabasco, ...	245	12,000	San Juan Bautista (Tabasco), Ciudad Real (Chiapas).
San Juan, ...	275	8,000	Leon (Nicaragua).
3. *Basins inclined to the Pacific.*			
Rio Santiago, ...	350	30,000	Guadalaxara, Guanaxuato, Morelia (Michoacan), Queretaro.
Culiacan, ...	280	7,000	Culiacan (Sinaloa), Durango.
Rio Colorado, ...	750	170,000	Tucson (Arizona).
Sacramento, ...	350	20,000	Sacramento (California).
Columbia, ...	800	194,000	Salem (Oregon), Boisé City (Idaho).
Frazer, ...	480	90,000	New Westminster (British Columbia).
Youcon, ...	1150	100,000	No towns.

Name of River or Estuary.	Length of Basin in Eng. Miles.	Area in Geographical Sq. Miles.	Capitals of States and Provinces.
4. Basins inclined to the Arctic Ocean.			
Mackenzie, ...	1200	441,600	No towns.
Back or G. Fish,...	420	..	,,
Churchill,.....	1300	73,600	,,
Nelson and Saskatchewan,.....	1000	360,000	Fort York (Manitoba).

11. **Lakes.**—One of the principal peculiarities of this continent is the immense number and magnitude of its fresh-water lakes, some of which (as Lakes Superior, Michigan, and Huron) are the largest in the world. Arranged in the order of the river-basins in which they occur, the following are the largest lakes of N. America. It will be observed that the principal lakes are confined to the basins of the St Lawrence, Mackenzie, and Saskatchewan, and that the combined area of the five great Laurentian lakes amounts to 91,300 sq. m., or more than the area of Great Britain with its adjacent islands. The individual areas of the principal lakes are appended in a tabular form.

St Lawrence Basin—Lakes Ontario, Erie, Huron, Michigan, and Superior. *Mississippi*—Lake Itasca, in Minnesota, forming the source of the river. *San Juan*—Nicaragua and Leon, in Central America. *Rio Santiago*—Lake Chapala, in Mexico. *Mackenzie*—Great Bear Lake, Great Slave Lake, Athabasca, Lesser Slave Lake, Wollaston. *Churchill*—Indian Lake, Deer Lake, Wollaston. *Saskatchewan*—Winnipeg, Winnipegoos, Manitoba, Lake of the Woods, Rainy Lake. *Continental Basin*—Great Salt Lake, Utah, Sevier.

Names of Lakes.	Area in sq. m.	Height in ft. above sea-level.
Ontario, ...	6,300	231
Erie, ...	9,600	565
Huron, ...	21,000	578
Michigan, ...	22,400	578
Superior, ...	32,000	627
Winnipeg, ...	9,000	628
Winnipegoos, ...	2,300	650
Great Bear Lake, ...	14,000	230
Great Slave Lake, ...	12,000	....
Athabasca, ...	3,400	....
Great Salt Lake, ...	1,800	4210

12. **Climate.**—In a continent embracing 75 degrees of latitude, and nearly twice as many of longitude, the varieties of climate are necessarily very great. Speaking generally, however, we find that its various sections have a lower average temperature than the corre-

sponding latitudes of the Old World. The immense forests which cover so large a portion of the surface, the general want of cultivation of the soil, and, above all, the great width of the continent in high latitudes, are no doubt some of the main causes that lead to this result. Other causes which affect the climate are the position of its mountain-ranges and of the surrounding seas, together with the great ocean currents traversing the latter. The eastern highland, with its slope towards the Atlantic, has an abundance of moisture throughout the year, brought by southerly and easterly winds from the Gulf of Mexico and the Atlantic. The western highland, on the contrary, is very dry, as the moisture which the westerly winds should bring to it from the Pacific are arrested at the margin of the plateau by the lofty mountains of the Sierra Nevada and Cascade ranges. The annual rainfall at Utah in this region is only about 5 in., while at New York, on the east coast, and nearly in the same latitude, it is 43 in. The eastern half of the great Mississippi basin is sufficiently watered, the moisture increasing in amount from N. to S.—St Louis having an annual rainfall of 42 in., and New Orleans, near the mouth of the river, 51 in.; but the western half of this basin is less humid, and especially the immense tract lying between the Rocky Mountains and the 100th meridian, known as the "Plains," where scarcely any rain falls, and the country is covered with a thin growth of grass, agriculture being nearly impossible. In general, North America is more humid than the corresponding continents of the Old World. The average rainfall of Europe is only 34 in., but the corresponding zone of N. America 39 in.; and while the tropical zone of the Old World shows 77 in., that of the New World is 115 in. Again, in regard to temperature, the western side of the continent is greatly warmer than the eastern, the reason being that a warm oceanic current proceeding from Japan laves the western coast, while a cold Arctic current flows southward along the eastern, between the coast and the warm Gulf Stream flowing northward. The difference of temperature between the W. and E. coast is generally from 15° to 20°. For example, Sitka I. has a mean annual temperature of 45° Fah., while Nain, in Labrador, in the same latitude, has a mean temperature of only 27°.82. The hottest portion of the New World, embracing the Gulf of Mexico, the Carribean Sea, and the coasts immediately adjoining them, lies mainly within this continent. The coldest region of North America and of the New World lies north of a line which, commencing at Cape Bathurst, near the mouth of the Mackenzie, deflects south-eastwards to the head of Chesterfield Inlet, and thence northwards to Lancaster Sound and North Devon (p. 36).

13. **Geology.**—The geological structure of North America remains to a large extent unexplored, Canada and the United States being the only portions that have received adequate attention.

It is understood, however, that CRYSTALLINE FORMATIONS cover the greater part of Alaska, British Columbia, Mexico, Central America, the West Indies, the eastern half of British America, and the interior of

Greenland, though its western shores are covered with primary and tertiary formations; that the PALÆOZOIC group occupy the surface of that part of the continent lying between the Rocky Mountains and the great lakes, together with the western and southern shores of the Hudson Sea, and the north-western portion of the great American archipelago; that SECONDARY FORMATIONS prevail chiefly in the United States, especially between the Rocky Mountains and the Missouri; and that the TERTIARY SERIES is chiefly prevalent in the great western plateau which extends from the Arctic Ocean to the G. of California. The principal volcanoes and volcanic rocks occur in the Peninsula of Aliaska, the oceanic range of the Coscada Mountains, the table-lands of Utah, Mexico, and Central America, parts of Nova Scotia, Newfoundland, Labrador, and Greenland. For further details we refer the student to the corresponding paragraphs of the different countries of this continent.

14. **Minerals.**—Ever since its discovery, in the beginning of the fifteenth century, North America has been celebrated for the richness and variety of its mineral productions. The mines first wrought were those of Mexico and Central America; but recently California and British Columbia have eclipsed all other countries, with the exception of Australia, in their inexhaustible supply of the precious metals.

We can here enumerate only the principal localities in which the most important minerals occur. *Gold* is principally found in California, British Columbia, Mexico, Central America, Canada, and the Alleghany Mountains. *Silver*, Central America, California, Canada, and in a vast number of localities on the table-land of Mexico. *Copper*, Canada, especially N. and E. of Lake Superior (which is one of the richest copper regions on the globe), New York, Indiana, California, Mexico, Central America. *Lead*, Illinois, Wisconsin, Missouri, New York, California, Mexico, Central America, Canada. *Tin*, Mexico, Canada (near Lake Superior). *Zinc*, Central America. *Iron*, the Alleghanies, and numerous localities in the United States, Mexico, Central America, Canada. *Mercury*, Kentucky, Ohio, California, and the region S. of the great lakes. *Cinnabar*, or sulphuret of mercury, California, Mexico. *Coal*, generally wherever the upper palæozoic strata abound, as in Pennsylvania, Michigan, Iowa, Missouri, California, Cape Breton, Nova Scotia, British Columbia, Vancouver Island. *Sulphur*, Central America, especially in Guatemala. *Salt*, Utah, New York, Pennsylvania, Virginia, Massachusetts, Kentucky, Illinois, Missouri, Mexico, Honduras. *Marble*, Canada, United States, Honduras. *Precious Stones:* diamonds in California, jasper in Honduras.

15. **Botany.**—The flora of North America, including Central America and the West Indies, embraces wholly or in part no fewer than six of the twenty-five "phyto-geographic regions" into which the land surface of the globe is divided—viz., the 1st, 4th, 5th, 15th, 16th, and 19th regions. For the names and precise limits of these regions we must refer to p. 54 and 55, and for their more striking characteristics to the botanical sections under Europe, British America, the United States, Mexico, Central America, and the West Indies.

The New World has long been famed for the prodigious luxuriance and variety of its vegetation. Although we are far from being minutely

acquainted with its natural history, it may be affirmed without hesitation, that no other portion of the world of equal extent can rival it in the riches and splendour of its flora. Several years ago more than 15,000 species of flowering plants had been described as belonging to it, besides a proportionate number of cryptogamia. When the northern continent was discovered, one vast and almost continuous forest covered the whole surface, from the St Lawrence and the great lakes to the G. of Mexico, and from the Rocky Mountains to the Atlantic, embracing an area of upwards of a million of square miles. Much of this ocean of vegetation has since been cleared away, though, to this day, hundreds of miles of unbroken forest exist in numerous localities; while boundless prairies, destitute of trees, but covered with tall grasses, occupy vast tracts in the north of the continent, and on the eastern side of the Rocky Mountains. The forest trees are extremely numerous in species, embracing many varieties of oak and pine, with the ash, beech, birch, cedar, chestnut, cypress, juniper, hickory, locust, maple, mulberry, poplar, and walnut. As the traveller passes northwards into the British territories, the variety of species is smaller, embracing mainly pines, larches, aspens, poplars, alders, hazels, and willows; while towards the shores of the Arctic Ocean the trees become fewer in number and more stunted in size, till at length the dwarf-willow, six inches in height, is the sole representative of the gigantic forests of the tropical and temperate regions. Among the more characteristic plants of North America are its azaleas, magnolias, fuchsias, dahlias, and rhododendrons; while the entire cactus tribe is peculiar to its tropical regions. Europe is indebted to the western continent for several of its cultivated plants, more especially maize, cacao-bean or chocolate-tree, manioc or cassava, the potato, and the tobacco plant; while, on the other hand, America is indebted to European colonisation for wheat, barley, and the other kinds of corn, as also for rice, the bread-fruit tree, the sugar-cane, the coffee-shrub, flax, hemp, and the cotton-plant. America does not contain a single indigenous species of the heath tribe, nor has a pæonia ever been found in it, except a solitary one observed by Douglas on the Pacific side of the Rocky Mountains. This mighty chain forms an impenetrable barrier between two floras nearly as different in character as if they had been separated by an ocean. Melville Island, lat. 75°, is the most northern point at which vegetation has been observed; while the Red River Settlement, on the southern frontier of the Hudson Bay Territory, is the highest latitude at which the cereals have been cultivated; though doubtless barley could come to maturity as far N. as Fort Chippewyan, lat. 59°, where the heat of the four summer months is four degrees higher than at Edinburgh.

16. **Zoology.**—The types of animal life indigenous to the western continent are in general inferior in size and strength to those of the eastern. The lion of the Old World is represented by the puma, and the tiger by the jaguar; though the gigantic condor of South America is more powerful and formidable than any bird found in the eastern hemisphere.

North America forms one of the six zoological kingdoms into which the land surface of the globe is divided. It embraces two (or, according to some, three) provinces, the first of which embraces North-western, British, and Danish America, and the second the United States. Usually Mexico and Central America are made to form a part of the South American kingdom; but we shall here, for the sake of uniformity, regard

those countries as forming the third or tropical province of the northern continent. The zoology of the first or Arctic province of North America closely resembles, and is, indeed, for the most part, identical with, that of the corresponding province in Europe and Asia. Here the species are comparatively very few in number, and consist generally of the lowest orders of the respective classes; but this is in a large measure compensated for by the extraordinary number of individuals belonging to the different species, and occasionally, as in the case of the whales, by the gigantic dimensions of the forms. The colours are also of uniformly sombre hues. Not a bird is to be seen of brilliant plumage, not a fish nor mollusc with varied hues. The most conspicuous MAMMALS of this province are the white and polar bear, the moose and rein-deer, the musk-ox, beaver, white fox, racoon, marten, squirrel, sea-otter, mink, musk-rat, ermine, wolverine, lemming, hare, various seals, and numerous species of whale. Among BIRDS may be enumerated some sea-eagles, a few waders, with an immense number of other aquatic species,—as gulls, cormorants, divers, petrels, ducks, and geese. REPTILES are almost wholly wanting, being represented by a solitary tortoise. The ARTICULATA embrace a few insects of inferior species and numerous kinds of minute crustaceans. The majority of the MOLLUSCS belong to the order Tunicata, the remainder being Gasteropoda and a very few Cephalopoda. Among the RADIATA are a great many jelly-fishes, star-fishes, and sea-urchins. The fauna of the Temperate province of this continent also resembles that of the central provinces of Europe and Asia; for, though the species are almost all different, the families, and even the genera, are the same. The number of terrestrial species regarded as identical is constantly diminishing as the progress of science advances. For the particulars, see under "United States," "Mexico," &c. The accompanying tables show the distribution of the land Vertebrata in the three provinces of this kingdom:—

Name of Order.	Total Number of Species.	Total Species in North America.	Arctic America.	Temp. America.	Tropical America.
MAMMALIA OF NORTH AMERICA.					
Quadrumana, ...	170	8	...	...	8
Carnivora, ...	514	109	36	50	109
Marsupialia, ...	123	4	...	1	4
Rodentia, ...	604	118	32	60	34
Edentata, ...	28	12	...	1	12
Pachydermata, ...	39	4	...	...	4
Ruminantia, ...	180	13	10	10	7
Cetacea, ...	75	24	24	...	...
Totals, . . .	1733	292	102	122	178

Name of Order.	Total Number of Species.	Total Species in North America.	Arctic America.	Temp. America.	Tropical America.
Birds of North America.					
Rapaces,	...	54	10	22	53
Scansores,	...	127	5	12	122
Oscines,	...	333	14	72	319
Gallinæ,	...	49	4	10	45
Grallatores,	...	87	21	36	59
Natatores,	...	122	49	26	26
Totals,	6226	772	103	178	624
Reptiles of North America.					
Testudines,	69	20	1	19	10
Sauria,	203	23	3	8	20
Ophidia,	265	32	2	28	30
Amphibia,	120	40	3	38	2
Totals,	657	115	9	93	62

17. **Ethnography.**—The population of the New World is presently estimated at 84,542,000, two-thirds of whom belong to the northern continent (including Mexico, Central America, and the West Indies), and one-third to the southern. It consists of three pure races—viz., the Indians or aborigines, the Negroes or Africans, the Caucasians or Whites (consisting of Europeans with their descendants), and a mixed race, springing from the union of those of pure blood. The European population amounts to about a half of the whole; while the other three divisions are nearly equally represented, each consisting of about 9,000,000. The Indian population, including the Esquimaux of the northern regions, who are few in number, and probably of a different origin from the other aborigines, is about equally divided between the two continents, there being 4,900,000 of them in N. America, and 4,100,000 in the southern continent. In Mexico alone they number 5,000,000, in Central America 1,000,000, and in the United States about one-third of a million. South America, unlike the northern continent, exhibits a preponderance of the aboriginal and mixed races. The Negroes number 4,435,709 in the United States; 2,000,000 in the West Indies; while in Brazil they constitute a full half of the population. Except in the Spanish West Indian possessions and Brazil, the negroes are now everywhere in the enjoyment of liberty.

Antiquities.—How America was peopled, and what is the real affinity of its aboriginal tribes to the rest of mankind, are questions that are still involved in obscurity, notwithstanding the numerous and able investiga-

tions that, during the last half-century, have been instituted in every department of the subject. After a careful examination of much that has been written on this very interesting theme, we incline to the opinion that by far the greater portion of the New World was peopled at different points, and from different parts of Eastern Asia; that these migrations, though all very ancient, took place at distinct and widely-separate periods; but that the ancestors of the present aborigines of the eastern part of North America entered that continent directly from Northern Europe, and swept before them the comparatively advanced civilisation which had been developed there before their arrival. The memorials of a population, differing in many important respects from the tribes which roamed in America at the time of its discovery by Columbus—yet in other points strongly resembling them—are found in great numbers throughout the whole length and breadth of the continent. These memorials have been discovered in the extreme north-west of the continent, where, however, they are comparatively few and uninteresting, though apparently of great antiquity; around the western and southern shores of the great lakes, where they have been more carefully examined; along the Gulf of California, where in some places they cover the ground for many leagues; and especially in the broad valley of the Mississippi, with its tributaries the Ohio and Missouri, where they occur in almost incredible numbers and magnitude. Indeed, so far as the northern continent is concerned, the valley of the Ohio would appear to have been at one time—probably about a thousand years ago—the grand centre of power and population of this now extinct or dispersed people. The works of various kinds which they erected, the remains of which still exist (the animal mounds, the conical mounds of sepulture, the sacrificial mounds, the temple mounds, the sacred enclosures, the beacon mounds, and the systems of fortification), are evidences of immense resources for so rude an age; far greater, indeed, than are to be found in any other portion of the continent, except in what would seem to be another and much later centralisation of the same people in Mexico and Yucatan, where they passed the golden age of their history. (See p. 555.) These and other monuments of hoary antiquity in the so-called New World, lead us irresistibly to the inference, that the true aborigines of the basin of the Mississippi had made great progress in the useful and ornamental arts: for not only do we find arrow-heads, beads, coarse vessels of pottery, stone axes, knives of flint; but the sculptured figures of various animals, executed with much skill; well-chiselled likenesses of the human head; copper bracelets; extensive remains of mining operations and of the manufacture of salt; and above all, tablets of curious hieroglyphics, apparently recording the great events in their history. Having entered America at its north-west angle, they resided for ages between the Rocky Mountains and the Alleghanies, in every part of which are still seen the memorials of their ancient greatness. At length, driven southward by fresh hordes of immigrants, they ultimately settled in Mexico, where they attained the climax of their civilisation, and erected great cities and other public works which excited the astonishment of Cortez and his companions. How many centuries must have elapsed ere this primeval race, that had made such astonishing progress in so many of the arts, but of whose existence both history and tradition are alike silent—whose colossal public works have been buried for ages under gigantic forests, or deserted by the rivers and lakes in whose vicinity many of them must have stood—could have degenerated into the savage tribes of hunters and warriors that now roam over the forests and prairies of the North American continent!

But the attempt to trace any close connection, by means of these ancient monuments, between the Mexicans and the aborigines of South America, appears to have entirely failed. The Peruvian civilisation, instead of being an offshoot from the Mexican, or an improvement upon it, seems rather to have been spontaneously developed, having its origin and growth within the limits of the southern continent, and attaining its climax under the Incas. Tschudi and others are of opinion that Manco Capac in Peru, and Quetzacoatl in Mexico, were Buddhist missionaries who, about A.D. 1000, visited the American continent with the view of reforming and elevating the natives. If this supposition is well founded, it throws some light on the question, Whence came the earliest inhabitants of North and South America respectively? and corroborates the hypothesis, that the civilisation of the southern continent was not derived from that of the northern. On the whole, it would appear that while the aborigines of North America came originally from Mongolia, those of the southern continent came from China, Japan, the Malay Archipelago, and other countries of south-eastern Asia. The maritime habits of these nations render this supposition sufficiently probable, while their charts and maps give indications of voyages to the New World (which they designate by the name of Too-sang) as early as the seventh century of our era. With chains of islands, not far remote from each other, stretching across the Pacific Ocean from continent to continent—with winds and marine currents setting, often for weeks together, towards the American shores—with wars to make them flee, and curiosity or cupidity to make them rove—and with casualties to launch them on voyages the direction or length of which they knew not—we need not marvel that the first inhabitants of the New World should have come originally from Eastern Asia. Similar events, though on a smaller scale, have frequently taken place in more recent times. For example, Iceland was discovered in A.D. 861 by Danish mariners, bound for the Farōe Isles, but thrown out of their course by tempests; Greenland was discovered by a Norwegian in 982; Cabral, the commander of a Portuguese fleet, on his way to the East Indies in the year 1501, departed so far from the African coast as to touch the shores of South America, and thus the discovery of Brazil was purely accidental; while in 1833, a Japanese junk was cast ashore on the American coast, at Cape Flattery, opposite Vancouver Island, three men being still alive out of an original crew of seventeen.

LANGUAGES.—The languages spoken by the aborigines of the New World are distinguished from all Oriental tongues by three striking peculiarities. 1. Notwithstanding their great number, they all strikingly resemble each other in grammatical structure—a strong proof of the common origin of the inhabitants. 2. They differ very widely from each other in their roots or vocables, many of them having scarcely a word in common with any other tongue. 3. But their most remarkable feature is their *polysynthetic* or *holophrastic* character—that is, they are all characterised by peculiarly complex forms, somewhat resembling our compound words, each term expressing a number of distinct ideas. For example, the word *amatlacuilolitquicatlaxtlahuitli* signifies "the reward given to a messenger who bears a hieroglyphical map conveying intelligence." In these linguistic features, which so widely distinguish these tongues from all others, we have the best species of evidence that the American continent was peopled at a very remote period of antiquity. In the 'Bible of Every Land' upwards of two hundred languages belonging to this family are enumerated, and these are divided into ten groups (exclusive of the dialects spoken in Mexico and Central America),

seven of which belong to the northern continent, and three to the southern. These are: 1, the Esquimaux, spoken along the entire northern coast by a people who, in physical conformation, appear to be intermediate between the natives of Northern Asia and the aboriginal Indians; 2, the Athapascan or Chippewyan, occupying a broad belt south of the Esquimaux, and mainly between the Hudson Sea and the Pacific; 3, the Algonquin, found now chiefly in Canada and the Hudson Bay Territories, but formerly covering also a large portion of the United States; 4, the Iroquois, occupying a large tract of country in the United States, and in the centre of the Algonquin area; 5, the Sioux or Dacota, comprising the tribes inhabiting the prairie country of the interior, from the Mississippi to the Rocky Mountains; 6, the Floridian or Appalachian, embracing the languages originally spoken in the southern United States, but now in several instances extinct; 7, the unclassified tongues of the United States, between the Rocky Mountains and the Pacific, and sometimes known as the Panis-Arrapahoes. The numerous languages of Central America are little known and still unclassified: for the Aztec or Mexican, see at p. 555. Less is known regarding the ethnology of South America than perhaps of any other region in the world; but the languages have been provisionally arranged under three groups—viz., 1, the Ando-Peruvian, spoken by all the nations occupying the great mountain-chain of that continent; 2, the languages of Eastern South America, embracing the Guarani and Carib, in Brazil and Guiana; 3, the languages of Central South America, spoken by the tribes that inhabit the forests and llanos that extend from the Paraná to the Rocky Mountains.

BRITISH NORTH AMERICA.

Boundaries.—N., the Arctic Ocean; W., Alaska and the North Pacific Ocean; S., the United States, from which it is separated by the parallel of 49°, by the great lakes, and by the River St Lawrence, as far as the 75th degree of W. lon.; E., the North Atlantic, Davis Strait, and Baffin Bay.

Extending from lat. 42° 21′ to 82° N., and from lon. 53° 5′ (Cape Race) to the United States' territory of Alaska, 141° W. lon., British America embraces 39½° of lat. and 88° of lon. The central point of this immense area is in lat. 62° 10′ N., and 97° W. lon., a short distance east of the southern extremity of North Lined Lake, which discharges its waters into the western side of the Hudson Sea.

Area and Population.—The area is estimated at 3,553,484 sq. m., or nearly the size of the continent of Europe; and the population is 3,880,131, or a third more than the present population of Scotland, being little more than one person to every sq. m. The area is thus considerably larger than that of the United States, including Alaska, but the population does not amount to one-tenth of that of the great Republic. Only a small portion of this immense territory is actually

colonised, and by far the larger part of it has a soil too sterile and a climate too severe to admit of the successful pursuit of agriculture.

Surface.—An elevated plateau in the W., traversed by lofty mountain-chains, which increase in elevation from N. to S., and rise in many places above the limit of perennial snow.

East of this is an immense plain of slight elevation, which gently inclines in the direction of the Hudson Sea, its eastern boundary. This plain is traversed in the direction of its greatest length by a chain of lakes unparalleled for their number and magnitude. The principal members of this chain belong to the basin of the St Lawrence, which is throughout highly fertile and admirably adapted for colonisation. The other principal lakes are in the basins of the Mackenzie and Saskatchewan. On the banks of the latter river, and around Lake Winnipeg, there is an area of about 400,000 sq. m. of rich soil, and well adapted to agricultural purposes, the climate being sufficiently mild for the growth of wheat. East of this, and between the Hudson Sea and the Atlantic, lies the barren and inhospitable region of Labrador; while, in the still higher latitudes, the surface is a monotonous stony waste, with a low and scanty vegetation, abandoned to the Esquimaux, the rein-deer, and musk-ox. Here the winter cold is terrific, and the subsoil permanently frozen.

Political Divisions.—British North America (a term now nearly synonymous with the Dominion of Canada) comprises the following main divisions:—1. The Eastern or Laurentian Provinces—viz., Ontario, Quebec, New Brunswick, and Nova Scotia, all of which were united in 1867, under the name of the "Dominion of Canada," together with Prince Edward Island, formally incorporated in the Dominion in 1873, and Newfoundland not yet incorporated. 2. The Pacific Colonies, embracing British Columbia, the district of Stickeen, and the islands Vancouver, Queen Charlotte, &c., all of which were formed into one Colony in 1866, and united to the Dominion of Canada in 1871. 3. The North-West, or Hudson Bay Territory, extending across the continent from Alaska to Labrador. This immense region is understood to be under the jurisdiction of the Dominion, but as yet it is unorganised. 4. Manitoba, formerly known as the Red River Settlement, lying between Lake Winnipeg and the United States' frontier, and formally annexed to the Dominion in 1870.

The following table shows the area and population of these various sections of British North America:—

Name of Province.	Area in Eng. sq. miles.	Population (1871).
Ontario,	107,780	1,620,851
Quebec,	193,355	1,191,516
New Brunswick,	27,322	285,594
Nova Scotia,	21,731	387,800
Prince Edward Island,	2,173	94,021
Total, Eastern Provinces,	352,361	3,579,782

Name of Province.	Area in Eng. sq. miles.	Population (1871).
Brought forward, . . .	352,361	3,579,782
British Columbia, ...	213,000	42,000
Manitoba, ...	13,928	11,963
N.-W. Territory, ...	2,934,000	85,000
Total Dominion of Canada, . .	3,513,284	3,718,745
Newfoundland (1874), ...	40,200	161,386
Total British N. America, . .	3,553,484	3,880,131

DOMINION OF CANADA.

I. The Eastern Provinces, together with Prince Edward Island and Newfoundland.

Boundaries.—N., Labrador and N.W. Territory; W., the 90th meridian; S., the Great Lakes, the United States, and the Atlantic; E., the Atlantic.

Extending from Detroit, in Michigan, lat. 42° 21′, to Cape Bauld, in Newfoundland, lat. 51° 39′ N., and from Cape Race, lon. 53° 5′, to 90° W., this region embraces 9° 18′ of lat. and 37° of lon. Ottawa, the cap. of the Dominion of Canada, near the central parallel, is in the same lat. as Oregon City, St John (New Brunswick), Lyon, Venice, Simferopol, and the centres of the Sea of Aral and Lake Balkash.

Area and Population.—The area of these five provinces and of the island of Newfoundland amounts to 392,561 sq. m., or 3¼ times the area of the British Isles. In 1871, the population amounted to 3,741,168, being only a little more than the population of Scotland. In 1851, the population of the six provinces was only 2,478,145; hence these six provinces have in twenty years added 50 per cent to their population, while in the same period the United States have added 67 per cent.

Political Divisions.—The Dominion of Canada, constituted in 1867, embraced four provinces—viz., Ontario or Upper Canada, and Quebec or Lower Canada—both in the basin of the St Lawrence, and separated from each other by the Ottawa; and New Brunswick and Nova Scotia, south of the estuary of that river. The two former may be called the inland provinces, and the two latter the maritime provinces. Prince Edward Island entered the confederation in 1873, but Newfoundland has hitherto remained aloof. The following are the principal towns in the six provinces:—

ONTARIO.—Ottawa 22 (Ottawa), Toronto 46, Kingston 12, Hamilton 27 (L. Ontario), Niagara 10 (Niagara), London 16 (Thames).

QUEBEC.—Quebec 60, Three Rivers 6, Montreal 107 (St Lawrence), Sherbrooke 6 (St Francis).

NEW BRUNSWICK.—Fredericton 6, St John 29 (St John), St Andrews 7 (Passâmaquoddy Bay).

NOVA SCOTIA.—Halifax 30 (S.W. coast), Yarmouth (Bay of Fundy), Windsor (Minas Bay), Pictou 5 (Northumberland Strait), Sydney 1 (I. Cape Breton).

PRINCE EDWARD ISLAND.—Charlottetown 9 (Hillsborough), Georgetown (E. coast), Princetown (N. coast).

NEWFOUNDLAND.—St John's 23 (S.E. coast).

Descriptive Notes.—**Ottawa**, situated on the edge of a dreary wilderness, but now connected with the great highways of commerce by canal and railway, possesses several important advantages as the capital of the Dominion. It enjoys unrivalled water-power, which has already been turned largely to account in the lumber trade: the supply of magnetic iron ore in the vicinity is of unlimited extent, though coal is wanting to turn it to proper account. **Toronto**, the cap. of Ontario or Upper Canada, is, in regard to population, the third city in Canada, and the grand emporium for its wheat, which it exports to Britain and the United States. **Kingston**, a considerable city at the N.E. extremity of Lake Ontario, is the entrepôt of the trade between Upper and Lower Canada, and a naval arsenal of Great Britain. **Hamilton**, a thriving town on the Grand Trunk Railway, and at the W. extremity of Lake Ontario, has an active and increasing trade. **Niagara**, a flourishing town at the mouth of the river of same name which unites Lakes Erie and Ontario, has a brisk traffic by steam with New York, Toronto, and Kingston: about 15 m. farther up are the celebrated Falls of Niagara, the most magnificent in the world. The Horse-Shoe Fall, on the Canadian side, is 1800 ft. across and 158 ft. in perpendicular depth, while the American Falls are 600 ft. broad, and 163 in depth: it is estimated that the falls discharge 100 million tons of water per hour. **London**, a beautiful town on the Thames, in the centre of the Canadian peninsula, is fast rising into importance. **Quebec**, the ancient cap., and present stronghold of Canada, is the great entrepôt for the trade of the dominion with Great Britain, the West Indies, &c. Shipbuilding is very extensively carried on. Quebec was founded by the French in 1608, and ceded to Great Britain in 1763: near the city are the Heights of Abraham, on which, in 1759, was fought the action rendered memorable by the fall of Wolfe and Montcalm, the British and French commanders. Six miles N.E. of Quebec are the celebrated falls of Montmorency, 250 ft. high and 60 ft. wide. **Montreal**, the largest, handsom est, and most commercial city in Canada, is situated on an island of the same name in the St Lawrence, 15 m. below its confluence with the Ottawa. Its architecture is on a scale of magnificence which is rivalled by few of the finest cities in Europe. It is the centre of an extensive railway system, and the natural outlet for the products of the vast grain countries which border the great lakes. The Victoria tubular bridge, carrying the Grand Trunk Railway over the St Lawrence, is the largest in the world, being 9194 ft. in length, or nearly two m. It was opened in August 1860. **Fredericton**, formerly St Ann's, though much inferior to St John, is the seat of the provincial assembly. **St John**, the com-

mercial capital and the largest city in New Brunswick, has a fine harbour, which is open at all seasons, and defended by several forts. It is the entrepôt of a wide extent of country, possesses valuable fisheries, and exports timber, fish, furs, and lime, in large quantities. **Halifax**, the cap. of Nova Scotia, and the most important city in the **Maritime** Provinces, is built of wood, and beautifully situated on a narrow arm of the sea leading up to Bedford Basin, one of the finest harbours in the world. It is the principal station of the British army and navy in North America, and is well defended by strong forts and batteries. **Halifax** is the nearest port to Great Britain on the American continent, being only 1800 m. from Galway, a voyage of six days; and a railway, projected from it to Quebec through the centre of New Brunswick, will bring that city within eight days' journey of Liverpool, with which there is regular steam communication. **Windsor**, a small town, charmingly situated on Minas Bay, contains an Episcopal college. **Pictou**, the principal town on the G. of St Lawrence, has an excellent harbour and considerable trade. **Charlottetown**, the cap. of Prince Edward Island, has a magnificent harbour, and enjoys great commercial facilities. **St John's**, cap. of Newfoundland, stands on a spacious and secure harbour defended by several forts; it is much resorted to during the fishing season, when numerous vessels are employed in the capture of seals.

Capes, Islands, Gulfs, and Straits.—See under "North America."

Surface and Mountains.—The six eastern provinces are almost wholly confined to the basin of the St Lawrence, which is estimated to embrace an area of 297,600 sq. m., of which 91,300 m. are covered by the five principal lakes. Generally speaking, the surface of the Dominion is very varied, and in some parts extremely rugged. On the northern bank of the St Lawrence the land rises gently towards the interior for about 20 m., beyond which is a plateau of very moderate elevation. The mountains have no great elevation, the highest being the *Green Mountains*, 4000 ft., which form a prolongation of the Appalachian chain of the United States, and traverse Lower Canada south of the St Lawrence from S.W. to N.E., terminating at Gaspé Point; the *Wotchish Mountains*, in Lower Canada, 1500 ft. high, and covered with perennial snow, form the water-parting between the basin of the St Lawrence and the Hudson Sea: a range of hills in the N. of New Brunswick, extending from the Falls of the St John to the Bay of Chaleur, attains the height of 2170 ft., and forms the highest elevation in the maritime provinces.

The interior of Nova Scotia forms a table-land 700 ft. high, and the Cobequid Hills in the N. are 1200 ft. high. Cape Breton rises in the N. to an elevation of 1800 ft. Prince Edward Island is generally flat. Newfoundland is for the most part rocky and uneven; the "Long Range" in the W. stretches from S. to N., attaining an elevation of 1500 ft.

Rivers and Lakes.—The only river of importance in this part of British America is the St Lawrence, which has its remotest sources in the western tributaries of Lake Superior, and whose entire length is estimated at 2150 m. The area of its basin, as above stated, is 297,600 sq. m., a large portion of which is occupied by magnificent fresh-water lakes, the largest in the world (p. 508). The river receives different names in the different parts of its course—as, the St

Louis, above Lake Superior; the St Mary, between Lake Superior and Lake Huron; the St Clair, between Lakes Huron and St Clair; the Detroit, between Lakes St Clair and Erie; the Niagara, between Lakes Erie and Ontario; the Iroquois, between Lake Erie and Montreal; and the St Lawrence, between that city and Gaspé Point. For the principal affluents of the St Lawrence, see table of river-basins (p. 540). Owing to the numerous deep indentations of the sea, there are few rivers of any magnitude in the maritime provinces. The longest is the St John, in New Brunswick, which, after a course of 400 m., falls into the Bay of Fundy. The most important streams in Nova Scotia are the Shubanacadie, falling into Minas Basin, and the Annapolis, into the Bay of Fundy. For the principal lakes, see p. 508. Those of the maritime and insular provinces are small but very numerous, especially in Nova Scotia and Newfoundland.

Climate.—The climate of Canada is what geographers call *excessive*, both the heat of summer and the cold of winter being much greater than in corresponding latitudes in Europe.

Though the mean annual temperature is 44° in the S., and 32° in the N., the extremes of heat and cold range from 95° above to 36° below zero; but the dryness of the air and the absence of high winds greatly mitigate the cold of winter, rendering the climate salubrious, and highly conducive to longevity. Fatal epidemics, and even contagious diseases, are almost unknown; and persons subject to coughs and colds suffer far less than in Great Britain. The sky is remarkable for its purity and transparency, and fogs are rarely seen. In Lower Canada winter begins about the end of November, and lasts till the end of April; but in the upper province it is considerably shorter, and it sometimes passes without almost any snow. The difference between the winter temperature of the two provinces amounts to 11 degrees in favour of the latter (p. 36). In the vicinity of the great lakes winter is much milder than in the interior; but the St Lawrence is usually frozen over, for five months in the year, as far down as Quebec. The average depth of snow is 30 in., and the mean fall of rain 22 in. In the interior of New Brunswick the climate is thought to be gradually improving, owing to the clearing away of the forests; but at Fredericton, the cap., the range of temperature is still from 95° to —20°. Fogs are frequent on the S. coast of Nova Scotia. Here also the spring season is cold and tedious; in summer, the rain often falls in torrents, but the autumn is delightful. The annual fall of rain in Nova Scotia is 52 in., but the province is very healthy. The climate of Prince Edward Island is considerably milder than that of the surrounding colonies. Newfoundland is noted for its humid atmosphere, its dense fogs, and the cold of its winters, when the thermometer frequently falls to 30° below the freezing-point.

Geology.—By far the greater portion of Canada, especially the entire central and northern parts, from the western extremity of Lake Superior to the mouth of the St Lawrence, consists of *Crystalline* rocks. *Silurian* strata line both banks of the St Lawrence from Kingston to Quebec, and the southern side of that river from Quebec to Point Gaspé, together with the eastern half of the peninsula which extends from Georgian Bay to Lakes Erie and Ontario: the same formation occupies the right bank of the Ottawa in the lower half of

tiger-cat, beaver, marten, otter, minks, musk-rat, porcupine, weasel, moose-deer, squirrel, and hare—all of which, except the two last, are rapidly decreasing in numbers. The carriboa-deer roam in vast herds in the pastures of Newfoundland, and the celebrated Newfoundland dog is peculiar to the island. Birds consist of wild swans, wild turkeys, ducks, Canada geese, woodcocks, snipes, and many beautiful birds of the smaller feathered tribes, besides eagles, kites, hawks, horned owls, herons, bitterns, and crows. There are two remarkable features in the ornithology of this country—viz., 1. The birds are all destitute of song; 2. The periodic migrations of birds in amazing numbers, on their way to and from the Arctic regions. Snakes are numerous in Canada Proper, but the venomous kinds are not so plentiful as in the United States. Domestic animals comprise cattle and sheep, which in Nova Scotia are very numerous; horses are reared in vast numbers in Prince Edward Island; and swine and poultry in all the provinces. The seas, bays, and rivers literally swarm with fish of almost every name; and the celebrated "bank of Newfoundland," which forms the most extensive submarine elevation on the globe, is tenanted by immense shoals of capelin and lance, which attract the larger species—the cod and whale.

Ethnography.—The population consists for the most part of emigrants from the United Kingdom and their descendants, the principal exception being the province Quebec, where four-fifths of the inhabitants are of French extraction, that colony having belonged to France previous to its cession to Great Britain in 1763. They speak the French language slightly corrupted, and are nearly all Roman Catholics.

In 1871, there were in the Dominion 1,082,940 inhabitants of French origin, of whom 847,615 were in Quebec, and 33,287 in Ontario. There were 21,496 negroes, and about 23,000 native Indians, all of whom belong to two tribes, the Chippeways and Micmacs—sections of the great Algonquin nation—and the Mohawks, a branch of the Iroquois. A few of them have embraced Christianity, but the great majority are still heathens. Almost all the other inhabitants are of British extraction, with the exception of 66,500 "loyalists" from the United States (that is, persons who fought on the side of Great Britain during the American war), and 24,162 Germans. In the same year there were in the Dominion 2,019,853 Protestants; 1,532,489 Roman Catholics; 91,270 of diverse creeds. The English language prevails everywhere except in Quebec, where the French predominates; and Irish, Gaelic, and German may be heard in various localities. Few countries have provided more liberally for education than Canada. In Ontario no fewer than 22 per cent of the population were at school in 1862, and 11 per cent in Quebec. There were 14 colleges, 131 grammar-schools, and 6300 common schools, attended by 460,000 pupils. The maritime and insular provinces have also put forth great efforts to educate the people. It is said that in Prince Edward Island one-fifth of the whole revenue is expended on education, and that there are more schools than there are roads to them. The press is advancing rapidly; the journals are unstamped, and there is no duty on paper or advertisements. Generally speaking, every town and village has its own press, and not unfrequently two papers are issued from each

Government.—The Dominion of Canada is vested in a Governor-General (appointed by the Crown), who is aided by a privy council and a parliament consisting of a Senate and a House of Commons. The former consists of 77 members, being 24 for each of the original provinces, 5 for B. Columbia and Manitoba, and 24 for the three maritime provinces. The House of Commons consists of 206 members (who are chosen every five years), there being 88 for Ontario, 65 for Quebec, 16 for New Brunswick, and 21 for Nova Scotia, 4 for Manitoba, 6 for British Columbia, and 6 for Prince Edward Island, being one member for every 17,000 of the population. The laws of England form the recognised code in all the provinces except Quebec, where the Old French laws, subject to the alterations of Parliament, are still respected. Newfoundland is ruled by a Lieut.-Governor appointed by the Crown, assisted by an Executive Council and a House of Assembly.

The Imperial Government rarely interferes in the legislation of these colonies, except when some great national interest is involved. The ties that bind them to the home country are slackening every year, and it is not very improbable that ere long they may become wholly independent. Not being represented in the British Parliament, they pay no taxes; and though England protects them from foreign invasion, she refuses to maintain a standing army in the country except at the expense of the colonies. Already the number of British troops serving in the colonies has been reduced to 2000 men. The Dominion maintains a volunteer force of 37,170 men, and a newly-organised militia, in which all the male inhabitants between the ages of 18 and 60 are liable to serve. In 1872, there were on the lakes of Canada and on the St Lawrence 8 war-steamers carrying 18 cannons, belonging partly to Great Britain and partly to the Dominion. The Imperial Government possesses besides 2 steamers capable of being transformed into war-vessels. In 1874, the Revenue of the Dominion amounted to £4,348,100; the Expenditure to £4,820,000; and the Public Debt to £21,935,949. In the same year the Revenue of the two insular provinces was £166,974; the Expenditure, £201,994; and the Public Debt, £328,499.

Manufactures and Commerce.—In the Dominion of Canada the timber trade continues to form the chief industry of the people. The value of the wood exported in 1873 was £7,000,000, of which £5,196,956 worth were sent to Great Britain, and a much greater quantity was retained for home consumption.

The valley of the Ottawa supplies the finest varieties of wood, and New Brunswick the greatest quantity. Next in importance to the timber trade is that of agriculture, which has of late prodigiously increased. In 1873, the total exports of corn and flour amounted to £3,742,760. The fisheries are also of immense value. Newfoundland alone, in 1867, exported 815,088 quintals of cod-fish, 4923 tuns of seal-oil, 3800 tuns of cod-oil, and 399,041 sealskins; while Ontario and Quebec exported £950,000 worth of fish and oil. The exports of the Dominion to the United Kingdom, in 1873, amounted to £11,000,000, and the imports from the United Kingdom to £7,875,732. The trade of the Dominion is chiefly with the United States and Great Britain, the principal exports being to the former country, while the chief imports are derived from the latter. In the same year, the exports to the United States amounted to

about £5,000,000, and the imports from the United States to £4,300,000. Woollen and cotton manufactures are the principal articles derived from the mother country, though the duties levied on them are almost prohibitive, amounting to 15 per cent. Wood and horses form the principal exports from Prince Edward Island; fish, oil, and sealskins from Newfoundland. The total Exports of the two colonies, in 1869, to the United Kingdom were £685,853; and the Imports from the United Kingdom, £572,559. The total exports from the six provinces to all countries in 1873 amounted to about £18,122,000, and the total imports to about £23,317,000. The Dominion possesses a considerable merchant navy. In 1867 there were 6217 vessels, carrying 912,715 tons.

Internal Communication.—The Canals, though only 218 m. in aggregate length, are of great capacity, and are very superb works.

That along the St Lawrence, from the tide to Lake Ontario, is about 41 m. in length. The Rideau Canal, from Lake Ontario to Ottawa City, a distance of 135 m., carries vessels of 120 tons burden. The Welland Canal, from the S.W. of Lake Ontario to Port Maitland on Lake Erie, a distance of 42 m., allows vessels of 125 tons to pass from the one lake to the other, thus avoiding the insuperable Falls of Niagara. The Railways are on a grand scale, and some of their viaduct bridges are among the most stupendous in the world. Such are the Victoria Tubular Bridge across the St Lawrence, near Montreal, 9194 ft. long, which cost about two million pounds sterling, and the Great Suspension-Bridge over the Niagara River, below the Falls. In 1836 there were not 20 m. of railway, whereas in 1874 there were 3899 m., besides 16,244 m. of electric telegraph. The principal lines in the Dominion are the Grand Trunk, which, commencing at Port Sarnia on Lake St Clair, proceeds eastward by Toronto and Kingston to Montreal, where it crosses the St Lawrence, and proceeds E. to Richmond, and thence in a southerly direction to Portland, in Maine. From Richmond a branch line proceeds to Quebec and Fraserville. The next important railway is the Great Western, which runs from Toronto through Hamilton and London to Windsor, opposite Detroit, whence a line extends to Chicago: a branch line connects Hamilton with the Niagara, 2 m. below the celebrated falls. From Toronto, the Ontario and Huron Railway proceeds N.W. to Collingwood on Georgian Bay, a distance of 96 m. Another line, 160 m. in length, crosses the Grand Trunk at Stratford, and the Great Western at Paris, and connects Goderich, on Lake Huron, with Buffalo in the State of New York. The local Government of Quebec has gifted 3,000,000 acres to companies for the purpose of constructing railways on the northern shores of the St Lawrence, from Quebec to Montreal and Ottawa. In addition to the above, Halifax is connected with Windsor and Truro, while the proposed intercolonial line is to connect Halifax with Fraserville, 110 m. below Quebec, thus forming a continuation of the Grand Trunk Railway.

II. British Columbia.—Under the term British Columbia is now embraced the whole of British North America west of the Rocky Mountains. It includes not only the colony formerly known as British Columbia, lying between the Rocky Mts. and the Pacific, and between the Simpson River and the United States, but also the district known as Stickeen, extending from the Simpson River northwards, and along the eastern side of the United States territory of Alaska; Vancouver Island, formerly a separate colony, but

united to British Columbia in 1866; and Queen Charlotte Island, north-east of Vancouver. All these sections now form one colony, which in 1871 resolved to unite itself with the dominion of Canada. It extends from lat. 49° to about 62° N., and from lon. 117° (Mt. Brown) to 133° W.

Its entire length from N. to S. is about 900 m., with a breadth of mainland varying from 500 to 200 m., embracing an area of about four times that of the British Isles. But the settled portion, including Vancouver Island and Stickeen, does not exceed 213,000 sq. m., while the pop. in 1871 was only 42,000 persons, who are chiefly migratory, consisting of mining adventurers from California and other places. The settled white pop. may be estimated at about 15,000, not including the Chinese, of whom there are considerable numbers. The mainland is watered by three noble rivers—the Simpson, flowing westward, and dividing the country into two nearly equal portions; the Stickeen, or Frances River, farther north, in the settlement of that name; and the Frazer River (with its affluent, the Thomson), which flows from N. to S., and enters the Gulf of Georgia (which separates Vancouver Island from the mainland) after a course of 740 m. The head-waters of the Columbia are also within the limits of this colony; as also the Finlay branch of the Peace river, an affluent of the Mackenzie. The colony is to a great extent occupied by two grand mountain-ranges, running N.N.W., but gradually diverging from each other towards the N., where they enclose a vast plain, of from 1000 to 3000 ft. in elevation. The eastern boundary is formed by the main crest of the Rocky Mountains, some of the peaks of which in this region are among the loftiest mountains of the N. American continent, as Mt. Brown, 16,000 ft., Mt. Hooker and Mt. Murchison, about 15,700 ft. each. The Cascade Mts., or Sea Alps, run along the coast from near the mouth of the Frazer into the U.S. territory of Alaska, formerly Russian America. The average width of this range is about 100 miles, and many of its summits attain an elevation of about 10,000 ft. With the exception of the plain above mentioned, the interior is extremely mountainous, with vast forests, numerous lakes, and swampy tracts. During the last few years agricultural operations have been greatly extended, and it is now ascertained that the soil and climate are well adapted to the growth of cereals, especially wheat, barley, and oats, which grow luxuriantly. The country is well stocked with excellent timber, has extensive deposits of bituminous coal well fitted for the production of steam; while a magnificent gold-field, one of the richest in the world, was discovered in 1860 at the confluence of the Frazer with the Thomson. The geological formation of the gold region is precisely similar to that of California. The greater part of the country is of tertiary strata, with the exception of the Sea Alps, which are of trap, and the middle and western ranges of the Rocky Mountains, which are metamorphic. The climate is very moist in summer and extremely cold in winter, especially in the elevated interior, where snow blocks up the mountain-passes from October to July. The range of temperature is much greater than in corresponding latitudes of western Europe, the mean summer being 86° Fah. and the mean winter 15°. As yet there are no towns on the mainland, except New Westminster, the capital, situated near the mouth of the Frazer, with a pop. of only 800. Notwithstanding many serious drawbacks, there can be no doubt that there is a great future in store for British Columbia. It has many natural advantages, as compared with other sections of British North

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Internal Communication.—The Canals
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is marvellously fruitful in forage plants, possesses an admirable soil, and embraces besides an immense supply of coal and iron-ore of the best quality. With these conditions, added to a very healthy climate, it is not too much to expect that the southern part of the country will one day become the seat of an industrious, prosperous, and powerful people. The great desideratum of the country is the opening up of land and water communication with Canada and British Columbia.

IV. **Manitoba**, hitherto known as the Red River Settlement, was originally founded in 1813. It is situated on the banks of the Red River, which has its upper course in the United States. The population, 11,963 in number, is composed of emigrants from the Highlands of Scotland and Canada, together with retired servants of the Hudson Bay Company, and 50,000 native Indians and half-breeds. The soil is very fertile, and large crops of grain are raised; and there are natural forests of oak, elm, maple, and pine. The settlers possess great numbers of sheep and cattle, and most of the domesticated animals of England have been introduced. The rivers freeze in November and open in April; but Lake Winnipeg remains frozen till the end of May. This is the only colony to be found in the boundless tract formerly known as Rupert's Land. Hitherto the Settlement has been isolated and independent of Canada, but in consequence it was formally included in the Dominion, in opposition to the wishes of many of the settlers, who raised the banner of insurrection in 1870; but on hearing that a British force was on its way to subdue them, they agreed to be annexed to Canada.

Labrador, an immense peninsula between Hudson Sea and the Atlantic, forms the eastern portion of the British territory; but the authority of the new International Financial Society (p. 529) does not extend farther east than to lon. 70°. Greatest length, from E. to W., 1000 m.; greatest breadth, 850 m.: area estimated at 420,000 sq. m., or five times the area of Great Britain. The whole of this immense country is uninhabited by civilised man, with the exception of a few settlements on the St Lawrence and Atlantic coasts, which are visited during the summer by vessels engaged in the cod and salmon fisheries, and in seal-hunting. At this season the population rises to about 30,000; while at other times it is thinly peopled by nomadic bands of Montagnais, Nasquapee, and Mistassinni Indians, and the northern coasts by wandering Esquimaux. Large establishments are maintained on the coast for salting fish, and extracting their oil. Nain, a mission-station near the middle of the east coast, is in the same latitude as New Archangel, Fort York, Aberdeen, Riga, and Tobolsk. Labrador is subdivided into Rupert River, or East Main, in the W., and Labrador Proper in the E. The former of these contains the principal trading stations of the Company. The only sites of importance in Labrador Proper are four settlements of the Moravian missionaries—viz., Nain, Okhak, Hebron, and Hopedale, all on the N.E. coast. The shores are desolate and sterile in the extreme, but the interior consists of a lofty sterile table-land, 2240 ft. above the sea, strewed with an infinite number of boulders, which vary in size from 1 to 20 ft. in diameter. The climate is very severe, but less foggy than in Newfoundland. Mean annual temp. of Nain, 27° 82′: winter, 3° 66′; summer, 47° 9′. Corn will not ripen, and only hardy kitchen vegetables can be raised. Labrador Proper is under the provisional jurisdiction of Newfoundland.

GREENLAND, OR DANISH AMERICA.

Boundaries.—N. and N.E., the Arctic Ocean; W., Kennedy Channel, Baffin Bay, and Davis Strait; S. and S.E., the Atlantic. Lat. 59° 49′—81° 30′ N.; lon. 20°—75° W.

Greenland is now universally regarded as an island, or group of islands united together by everlasting bonds of ice, and deeply penetrated on its western side by narrow inlets which resemble the *fiords* of Norway. The highest latitude in Greenland waters hitherto reached by foreigners is lat. 81° 42′—a point to which the Swedish naturalist, M. Nordenskiold, succeeded in attaining in a Government screw-steamer, in the autumn of 1868. Cape Farewell, the southern extremity of Greenland, is on the same parallel as Mt. St Elias in Alaska, Unst in Shetland, St Petersburg, and Yakutsk.

Area and Population.—The area of Greenland is roughly estimated at 380,000 sq. m., or thrice the size of the British Isles; and the population, in 1875, at 9800, of whom only about 340 are Danes, the remainder being Esquimaux.

Surface and Divisions.—The surface is generally high, rocky, and barren. The elevated portions are covered with perennial snow; the glaciers extend in many places to the sea-shore; while the interior is supposed to be one vast field of ice. The E. coast appears to be about the most inhospitable region in the world. The W. coast is fringed with islands, some of them, as Disco Island, being of considerable size. The Danish government has divided the country into two Inspectorates—a southern and a northern—which are separated by the Long Fiord, lat. 67° N. The principal villages are Julianshaab, New Herrnhut, Christianshaab, and Uppernavik, all on the west coast; and Godhavn, on Disco Island. **Julianshaab** is the cap. or chief Danish station in Greenland; **Herrnhut** is the principal mission-station; while **Uppernavik** is the most northern civilised place on the globe.

Climate and Products.—The mean annual temperature of Greenland is probably about 27°.5 Fah.; but the difference between the highest and lowest temperatures (124°) is perhaps without a parallel. In July the thermometer sometimes stands as high as 84°, while in January it often sinks as low as 40° below zero. July is the only month of the year in which no snow falls; but the seas do not usually begin to freeze till January. The vegetation mainly consists of grasses and lichens in the north, and of a few scattered birches, alders, and willows in the south, where are also raised small quantities of corn, potatoes, and kitchen vegetables. Coal is found on the western coast, from lat. 69° to 72°; copper has been discovered on Disco Island; and kryolite, a new mineral containing sodium, has recently been found. The principal animals are—the white or polar bear, the reindeer, fox, and eider-duck, together with seals, walruses, and whales, large numbers of which are caught annually

by fleets of vessels from Scotland, England, and the United States. The seal is hunted for its valuable skin, which fetches a high price in the English market; the walrus, for its blubber and the ivory of its tusks; and the Greenland whale, for its valuable oil and whalebone of commerce.

Ethnography.—The natives, who are named Esquimaux, are a peculiar race, allied to the Mongolian family.

They live chiefly on seals and whale-blubber, and are clothed in skins. In summer their houses are tents formed of bone and the skin of the dog-fish, while in winter they live in holes dug in the ground and covered a-top with turf. It is now ascertained that this portion of the New World was discovered by a Norwegian, as far back as A.D. 982. It was soon after colonised from Iceland, but the intercourse between the colony and the mother country gradually diminished, and ultimately ceased, till at length the existence of Greenland became unknown to European nations. In 1587 it was rediscovered by Davis, and in the following century the Danes re-established a communication with the lost colony. The natives have been converted to Christianity by Moravian missionaries.

THE UNITED STATES.

THIS country embraces the central or most compact portion of the continent of North America, together with a large territory in the extreme north-west, now known as Alaska, but formerly as Russian America.

Boundaries.—Omitting the district of Alaska, purchased from the Russian Government in 1867, the United States are bounded as follows:—N., British America, from which they are separated for the most part by the 49th parallel of latitude and the great Canadian lakes; W., the N. Pacific Ocean; S., Mexico, the Gulf of Mexico, and the Strait of Florida; E., the N. Atlantic Ocean and New Brunswick.

This vast territory extends from Cape Sable in Florida, lat. 25° 7′, to the 49th parallel of north latitude, and from Eastport in Maine, lon. 67° 2′, to Cape Flattery on the Pacific coast, 124° 40′ W., thus embracing 23 degs. of lat. and 58 degs. of lon. While the lat. of its northern boundary corresponds with that of Cherbourg, its southern limit is on the same parallel with the centre of the Sahara; and the parallel of 37°, which passes through the centre, cuts San Francisco and Norfolk in the New World, and Cape St Vincent, Syracuse, Smyrna, Astrabad, Kunduz, and Yeddo, in the Old. The extreme length, from Passamaquoddy Bay to the Pacific, is estimated at 2800 m., and the extreme breadth, from Red River Settlement to the mouth of the Rio Grande, 1600 m. The frontier line measures about 12,000 m.; but including the sinuosities of the shores and the coast-line of Alaska, the entire sea-line is about 12,600 m., or one mile of seaboard to every 278 sq. m. The Atlantic coast, as

far south as Cape Cod in New England, is high and rocky, and has many fine harbours; but farther south, as also along the Gulf of Mexico, the coast is low and sandy, while the harbours are often obstructed by sand-banks. The Pacific coast is high, mountainous, and almost unbroken; but some of the bays, protected by projecting spurs of the mountains, afford good harbourage. San Francisco Bay, on this coast, is one of the finest and most capacious in the world.

Area and Population.—The area of the United States, without including Alaska, a vast but sterile territory, amounts to 3,026,494 sq. m., but including Alaska, the area is reckoned at 3,611,844 sq. m., being twenty-eight times the area of the British Isles, or about the same size as Europe without the islands. At the treaty of Versailles in 1783, when Britain acknowledged the independence of the States, the area was estimated at 386,279 sq. m., or less than one-seventh of their present extent. The population has increased at a still more rapid rate. In 1790, when the first regular census was taken, the population numbered only 3,929,328, while at the last census (June 1870), including the thinly-peopled territory of Alaska, it amounted to 38,925,598, or nearly ten times what it was eighty years ago. The population, indeed, doubles itself in every twenty-five years,—a rate of progress almost unparalleled, and exceeding even that of the Canadian Dominion, which only adds 50 per cent in 20 years. The main cause leading to this result is the constant stream of emigration from Europe, especially from the British Isles and Germany. In the decade from 1845 to 1854 there entered the country a million and a half of Irish, while in 1875 there arrived 227,000 persons from all countries. A large number of Chinese have within the last few years entered the Western States of the Union.

Surface.—The country may be divided into three great physical regions — viz., the Atlantic slope, the great valley of the Mississippi, and the Pacific slope. The Atlantic or Eastern slope extends from the ocean for some 50 or 100 m. inland, and gradually increases in elevation till it terminates in the Alleghany Mountains, which separate the waters that flow westward to the Mississippi from those that flow eastward to the Atlantic. The Alleghanies, or Appalachian chain, consist of a series of parallel ranges about 1300 m. in length, with a varying breadth of from 30 to 150 m.; average elevation, 2500 ft.; highest summit (the Black Mountains in North Carolina), 6707 ft. The greater part of this slope is a level country, and is the most thickly settled portion of the United States, and containing their largest cities. The great valley of the Mississippi, formed by the long inner slopes of the Atlantic and Pacific highlands, is an immense level plain, the highest part of which does not exceed 850 ft. in elevation, except near the base of the Rocky Mountains, where it attains a height of 6000 ft. The Mississippi is navigable for large ships as far as Natchez, 350 m. from its mouth, and for gigantic river-steamers as far as the Falls of St Anthony, 2037 m. Its great tributary, the Missouri, is navigable for steamers in sum-

mer to Fort Union, in Montana territory, 2170 m., and in spring to Fort Benton, 400 m. higher up. Most of the other great tributaries are also navigable to the foot of the mountains on either side, and furnish the means of reaching by water every part of the vast fertile basin which they drain. The Pacific slope extends from the Rocky Mountain range to the Pacific Ocean, and differs widely from the two regions above described. Its two greatest rivers are the Colorado and the Columbia, which rise near each other in the Rocky Mountains, and, surrounding the great inland basin of Utah, enter the ocean, the former near the N. frontier of the United States, and the latter finding its way to the Gulf of California. Most of the rivers of this entire region, especially the Columbia and Colorado, flow through deep gorges, formed by perpendicular walls of rock hundreds of feet in height. The inland basin above referred to is a high plateau of about 5000 ft. in elevation, situated between the Rocky Mountains on the one side and the Sierra Nevada and Cascade ranges on the other. Great Salt Lake, near its centre, is 4738 ft. high. This plateau is in general a sterile forbidding region, and characterised by great drought.

Political Divisions.—At the Declaration of Independence, in 1776, there were only 13 states—viz., Delaware, Pennsylvania, New Jersey, Georgia, Connecticut, Massachusetts, Maryland, South Carolina, New Hampshire, Virginia, New York, North Carolina, and Rhode Island. But in 1875 there were 38 states, 10 organised territories, and 1 small district (Columbia), containing the federal capital, being in all 48 political divisions (without including Alaska), having an average area of 63,052 sq. m., and an average population of 810,000. They are conveniently arranged into five groups—viz., 6 North-eastern, or New England States; 7 Eastern or Mid-Atlantic States; 10 South Atlantic and Gulf States; 11 Central or Inland States; 4 Pacific States and 10 Territories. Nearly all the states are situated east of the dry region of the Rocky Mountains, while nearly all the territories are confined to the elevated plateau. The latter, though dry and barren, are rapidly increasing in population, owing to the rich mines they contain; and they will no doubt soon obtain the rank and privileges of states. The last state admitted into the Union was Colorado (June 1874).

North-Eastern or New England States

Maine.—Augusta 15, Bath 12 (Kennebec), Eastport 5 (Passamaquoddy Bay), Belfast 5, Bangor 18 (Penobscot), Portland 31 (Casco Bay).

New Hampshire.—Concord 12, Nashua 10, Manchester 23 (Merrimac), Portsmouth 11, Dover 8 (Piscataqua), Hanover 2 (Connecticut).

Vermont.—Montpelier 3, Burlington 14 (Onion R.), St Albans 4 (Lake Champlain), Middleburg 4, Rutland 4 (Otter Creek).

Massachusetts.—Boston 250, Charleston 28, Cambridge 39, Lynn 28, Salem 24 (Massachusetts Bay), Newbury Port 22, Andover 7,

Lawrence 28, Lowell 41 (Merrimac), Plymouth 6 (Cape Cod Bay), New Bedford 21 (Buzzard Bay), Fall River 26, Taunton 18 (Fall River), Worcester 41 (Seehouk), Springfield 26, Northampton 6 (Connecticut), Quincy 24 (E. coast).

Rhode Island.—Providence 68, Newport 12, Warwick 8, Bristol 5, Tiverton 5 (Narragansett Bay), Pawtucket 7 (Pawtucket), Smithfield 12 (Blackwater).

Connecticut.—Hartford 37, Middleton 9 (Connecticut), New London 10, Norwich 16 (Thames), Newhaven 50, Bridgeport 19 (Long Island Sound).

Eastern or Mid-Atlantic States.

New York.—Albany 76 Brooklyn 397, New York 942, Troy 46 (Hudson), Utica 29 (Mohawk), Oswego 20 (L. Ontario), Rochester 62 (Genesee), Buffalo 117 (L. Erie), Syracuse 43 (Erie Canal).

New Jersey.—Trenton 22, Camden 20 (Delaware), Newark 105, Paterson 33 (Passiac), Jersey City 83 (Hudson).

Pennsylvania.—Harrisburg 23 (Susquehanna), Philadelphia 674 (Delaware), Reading 33 (Schuylkill), Pittsburg 87, Alleghany 53 (Ohio), Scranton 35 (Lackawanna).

District of Columbia.—Washington 109 (Potomac).

Delaware.—Dover 4 n., Wilmington 30 n. (Delaware Bay).

Maryland.—Annapolis 5 (Severn), Baltimore 267. (Chesapeake Bay), Cumberland 10 (Potomac).

Virginia.—Richmond 51 (James River), Petersburg 18 (Appomattox), Norfolk 19, Portsmouth 10 (Elizabeth River), Fredericksburg 5 (Rappahannock).

West Virginia.—Charlestown (Gt Kannawha), Wheeling 19, Parkersburg 6 (Ohio).

South Atlantic and Gulf States.

North Carolina.—Raleigh 10 n. (Neuse River), Wilmington 13 (Cape Fear).

South Carolina.—Columbia 8 (Congaree), Charleston 51 (coast).

Georgia.—Atlanta 22, Columbus 10 (Chattahooche), Milledgeville 4 n. (Altamaha), Savannah 28, Augusta 15 (Savannah).

Florida.—Tallahassee 2 n. (Ocklokonee), Key West (Pine Islands), Pensacola 3 (N.W. coast).

Alabama.—Montgomery 10, Mobile 32 (Alabama), Tuscaloosa 4 (Mobile).

Mississippi.—Jackson 3 (Pearl River), Natchez 9, Vicksburg 12 (Mississippi).

Tennessee.—Nashville 25 (Cumberland), Memphis 40 (Mississippi), Knoxville 10 (Tennessee)

Arkansas.—Little Rock 12, Van Buren 3 (Arkansas).

Louisiana—New Orleans 191, Baton Rouge 6 (Mississippi).

Texas.—Austin 5 (Colorado), Galveston 14 (G. of Mexico), San Antonio 8 (San Antonio).

CENTRAL OR INLAND STATES.

Missouri.—Jefferson City 3 (Missouri), St Louis 312, Hannibal 4 (Mississippi).

Kentucky.—Frankfort 8, Lexington 15 (Kentucky), Louisville 100, Covington 24 (Ohio).

Ohio.—Columbus 33 (Scioto, *affl.* Ohio), Cincinnati 216 (Ohio), Dayton 32 (Miami), Zanesville 10 (Muskingum), Cleveland 92, Sandusky 13 (L. Erie), Toledo 32 (Maumee).

Indiana.—Indianapolis 48 n., Lafayette 14, Fort Wayne 17 (Wabash), Evansville 22, New Albany 13, Madison 13 (Ohio).

Michigan.—Lansing 4, Grand Rapids 17 (Grand River), Detroit 79 (Detroit).

Wisconsin.—Madison 9 n., Janesville 9 (Rock R.), Racine 11, Milwaukee 71 (L. Michigan), Fond du Lac 11 (L. Superior).

Illinois.—Springfield 17 n., Peoria 25 n. (Illinois), Alton 11, Quincy 24, Galena 12 n. (Mississippi), Chicago 298 (L. Michigan).

Iowa.—Des Moines 12 (Des Moines), Keokuk 13, Burlington 15, Davenport 20, Du Buque 18 (Mississippi), Iowa 5 (Iowa).

Minnesota.—St Paul 20 (Mississippi), Stillwater (St Croix).

Nebraska.—Lincoln n., Omaha 15, Nebraska 5 (Missouri).

Kansas.—Topeka 5, Kansas 32 (Kansas), Atkinson 4 (Arkansas), Leavenworth 18 (Missouri).

TERRITORIES AND PACIFIC STATES.

California.—Sacramento 16, San Francisco 150 (Sacramento).

Oregon.—Salem 2, Portland 8 (Williamette, *affl.* Columbia).

Nevada.—Carson City 3, Virginia 7 (Carson).

Washington Ter.—Olympia 3 (Puget Sound), Pacific City (Columbia).

Idaho Ter.—Boisé City (Snake, *affl.* Columbia).

Montana Ter.—Helena n. (Missouri).

Dakota Ter.—Yankton (Missouri).

Wyoming Ter.—Cheyenne n. (Platte).

Utah Ter.—Great Salt Lake City 13 (Jordan).

Colorado.—Denver City (Platte, *affl.* Missouri).

New Mexico Ter.—Santa Fé 7 (Santa Fé, *affl.* Rio Grande del Norte).

Arizona Ter.—Tucson (Santa Cruz, *sub-affl.* Colorado).

Indian Ter.—Tahlequah n. (Arkansas).

Alaska Ter.—New Archangel 2 (Sitka Island).

Descriptive Notes.—According to the census of 1870, there were n the United States fourteen towns of above 100,000 inhabitants; leven between 100,000 and 50,000; forty between 50,000 and 20,000; nd twenty-six between 20,000 and 10,000.

NEW ENGLAND STATES.—**Augusta**, cap. of Maine, is a small town with . United States arsenal. **Bangor**, the third city in the state, is one of he most extensive lumber depots in the Union. **Portland**, the most opulous and commercial city in Maine, has one of the finest harbours on he whole Atlantic coast. **Concord**, cap. of New Hampshire, is a great ailroad centre, and manufactures carriages extensively. **Manchester**, he largest city in the state, is one of the chief seats of the cotton manuacture. **Portsmouth**, a manufacturing city, possesses a fine harbour. **Burlington**, the largest city in Vermont, stands at the termini of several reat railways. **Boston**, cap. of Massachusetts, and the great literary and ommercial metropolis of New England, is in regard to population the eventh city of the United States. The streets are narrow and irregular; he houses are principally of brick, but the public buildings are of granite. Amongst the latter stands Faneuil Hall, where many patriotic meetings vere held during the War of Independence. Bunker's Hill, in the suburb f **Charlestown**, is the scene of a celebrated battle fought in June 1775, etween the American troops and the royalist forces. Benjamin Frankin was born here in 1706. In **Cambridge**, one of the suburbs, stands Harvard University, the oldest and best endowed seminary in the Union. **Salem**, a place of great trade, contains a valuable museum. **Lowell**, alled the Manchester of America, from the number and variety of its manufactures, the chief of which is cotton. The number of persons emloyed in the mills here, in 1870, was nearly 15,000, of whom 8800 were emales; number of mills, 50; spindles, 526,710; weekly product, ,240,000 yards of cotton cloth, 21,667 yards of woollen goods, and 5,000 yards carpeting. **Plymouth**, a small seaport town, and the oldest n New England, being the place at which the "Pilgrim Fathers" arrived n the Mayflower, 25th Dec. 1620. **New Bedford**, more extensively ngaged in the whale-fishery than any other town in the United States. **Providence**, cap. of Rhode Island, and in size the second city in New England, is distinguished for its literary and educational establishments. **Newport**, one of the most celebrated watering-places in New England. **Hartford** is actively engaged in commerce and manufactures, and contains an Episcopal College. **New Haven**, one of the handsomest cities in he Union, is the seat of Yale College.

MID-ATLANTIC STATES.—**Albany**, a large thriving city, is most advantageously situated both for foreign commerce and inland trade: its university is the principal educational establishment of the United States. **Brooklyn**, at the western extremity of Long Island, opposite New York, f which it may be regarded as a suburb, contains the United States avy-yard, 40 acres in extent, and a large quantity of military stores. **New York**, the largest and most populous city of the United States, and he chief commercial emporium of the New World, is situated on Manattan Island, at the confluence of the Hudson and East River. The city s triangular in form, and nine m. in circumference, and traversed by egular and handsome streets, the largest of which is Broadway, nearly our m. long, lined with shops and hotels, one of the latter containing 90 apartments. It was founded by the Dutch in 1614, was the seat of he first American Congress, in 1785, and of the inauguration of Washington, the first President of the United States, in 1789. **Troy** and **Roches-**

ter are important commercial and manufacturing cities. **Buffalo**, at the north-east extremity of Lake Erie, where it contracts into the Niagara River, is the great entrepôt between the North-West and the Atlantic seaboard, and one of the most thriving cities in the Union. **Syracuse**, on the Erie Canal, is noted for its valuable salt-springs, and for being the seat of the most extensive salt manufacture in the United States. **Newark**, the largest and most populous city in New Jersey, has numerous public institutions. **Philadelphia**, at the confluence of the Delaware and Schuylkill, formerly the cap. of the United States, is still the second city in the Union in regard to population and importance: it was founded by William Penn in 1682, and in the Old State House the independence of the Union was declared in 1776. **Pittsburg**, at the junction of two streams which form the Ohio, and in the midst of valuable coal-mines, is the chief seat of the iron manufacture: shipbuilding is extensively carried on, and here is manufactured most of the machinery of the steamboats that ply on the Mississippi. This is the greatest market in the Union for bituminous coal and petroleum. **Washington**, cap. of the district of Columbia, and the metropolis of the United States, contains the White House or residence of the President, and the Capitol or seat of the United States Congress, but has neither trade nor manufactures. **Wilmington**, the most important town in the State of Delaware, contains a United States arsenal, and numerous manufacturing establishments. Here took place an engagement in 1777, between the United States army under Washington, and the British army under Lord Howe. **Baltimore**, the sixth city in the United States as regards population, is ornamented with numerous monuments, one of which is an elegant obelisk commemorative of the defence of the city against the British forces in 1814: Baltimore is the greatest tobacco and flour market in the Union. **Cumberland**, the second city in Maryland, is noted for its coal trade. **Richmond**, cap. of Virginia and recently of the Southern Confederation, is the natural depot of a large extent of country, exports great quantities of flour, cotton, and tobacco. **Petersburg**, a busy manufacturing town, which largely exports tobacco and flour. **Norfolk**, the chief commercial port of Virginia. **Portsmouth**, noted for its fine harbour, and for its being an important naval depot of the United States. **Fredericksburg**, on the Rappahannock, will be long remembered as the scene of a disastrous defeat of the Union forces by the Confederates under General Lee, Dec. 13, 1862. **Wheeling**, the principal city in the new state of West Virginia, is largely engaged in manufactures and commerce. **Raleigh**, cap. of North Carolina, contains an elegant State-house, built after the model of the Parthenon at Athens. **Wilmington**, the largest city in North Carolina, is connected by rail with all the populous cities lying to the north of it. **Columbia** is a very handsome little town, with the streets beautifully ornamented with trees, and is the seat of South Carolina College. **Charleston**, the only important city in South Carolina, and the largest city in the South Atlantic states, will be long famous for its heroic defence against the U.S. fleet in 1863. **Savannah**, the largest and most commercial town in Georgia, has an excellent harbour defended by two forts, and exports great quantities of cotton, rice, naval stores, and tobacco. **Key West**, on an island, commands the entrance to the G. of Mexico. **Montgomery**, cap. of the state of Alabama, exports large quantities of cotton. **Mobile** (*Mo-beel'*), by far the most important town in the state, and, next to New Orleans, the principal port in the Union for its export trade in cotton. **Natchez** carries on a considerable foreign trade, and is the chief port in the state for the exportation of cotton.

Nashville, a handsome town on the left bank of the Cumberland, here crossed by a magnificent wire suspension-bridge: its railway and other facilities render it the seat of an active trade. **Memphis**, on the Mississippi, the most important town between New Orleans and St Louis, and a great cotton depot. **Little Rock**, cap. of Arkansas, is the principal place in the state. **New Orleans**, a large and flourishing city on the left bank of the Mississippi, 105 m. above its mouth, and by far the most important in the immense river-basin in which it is situated, possesses unrivalled advantages for inland trade, and, next to New York, is the principal commercial entrepôt of the Union. Previous to the late insurrection, it was the great port for the shipment of cotton, the exports of which in 1852 amounted to nearly one and a half million bales: tobacco, sugar, flour, corn, lard, and lead, were also exported in enormous quantities. **Austin**, cap. of Texas, has only 5000 inhabitants. Texas was formerly a member of the Mexican Confederation; was independent from 1836 to 1845, when it was annexed to the United States. **Galveston**, the most populous town in the state, is the principal seaport and seat of commerce.

CENTRAL STATES.—**St Louis**, a large and rapidly-growing city on the right bank of the Mississippi, 1130 m. above New Orleans, is the centre of the overland trade with Mexico, is an important military station, and possesses a great transit-trade by the Mississippi, Missouri, Illinois, and Ohio. **Louisville**, a rapidly-increasing and well-built city on the Ohio, immediately above the rapids, has numerous manufactures, and carries on an immense trade. **Columbus**, cap. of Ohio, is a place of considerable trade. **Cincinnati**, next to Chicago and St Louis the most populous city of the central states, is admirably situated in regard to commercial facilities, and carries on an immense traffic by means of its river, canal, and railway communications: it is also distinguished for its literary and benevolent institutions. In the year 1800 it had only 750 inhabitants; it has now 216,000. Vineyards are extensively cultivated in the vicinity. It is the largest pork-market in America. **Dayton**, the fourth city in the state, is, in proportion to its size, one of the leading manufacturing towns in this group of states. **Cleveland**, the second city in Ohio, is largely engaged in shipbuilding. **Indianopolis**, cap. and largest city of Indiana, has extensive manufactures, and is connected by railway with New York, Philadelphia, and Baltimore. **Detroit**, the commercial emporium of Michigan, is largely engaged in commerce and shipbuilding: has large iron and brass foundries, and is the landing-place of hosts of emigrants from Europe. **Milwaukee**, the commercial mart of a rich and improving country, is noted for the superior quality of the bricks manufactured here. **Galena**, an important mining town, derives its name from the *lead ore* obtained in the neighbourhood in large quantities: the copper-mines are also very rich and valuable. **Chicago**, with 300,000 inhabitants, situated in the heart of the grain-producing States, is one of the largest grain-markets in the world: it is also the great shipping depot of an immense fertile region. **Du Buque**, the central depot of the great mineral region of Iowa, ships immense quantities of lead. The lead region, partly in this state and partly in Illinois, embraces an area of 2880 sq. m. Here zinc, iron, and marble are also met with. **St Paul**, cap. of the newly-formed state of Minnesota, at the head of the navigation of the Mississippi, and 14 m. below the celebrated Falls of St Anthony, is rapidly rising into importance. **Lincoln**, cap. of Nebraska since 1869, is situated on the Platte river. **Omaha**, the former cap., at the eastern terminus of the Union Pacific Railroad, and on the right bank of the Missouri, here

crossed by a gigantic railway viaduct of cast-iron half a mile long. **Topeka** has taken the place of Lecompton as the cap. of Kansas.

PACIFIC STATES AND TERRITORIES.—**Sacramento**, cap. of the state of California, is the chief depot for the northern mines: it has also extensive commerce. **San Francisco**, the New York of the Pacific coast, and the shipping port of the mineral and agricultural wealth of California, has, since the discovery of gold in 1847, grown to be a great city. Its bay, which is perfectly land-locked, and has an entrance one mile wide, known as the golden gate, is capable of containing the navies of the world. San Francisco is the western terminus of the recently-constructed Pacific or Trans-Continental Railroad, which unites it with Omaha and Chicago, from which places there are several routes to New York and the Atlantic coast. **Salem** and **Portland**, small towns in the state of Oregon, favourably situated in the fertile valley of the Williamette, an affluent of the Columbia. **Virginia**, the most populous city in the lately-formed state of Nevada, is surrounded by rich mines of gold, silver, and mercury. **Olympia**, cap. of the territory of Washington, which is the only territory having a sea-coast. **Great Salt Lake City**, cap. of Utah territory, and the headquarters of the Mormons or Latter-Day Saints. Here the notorious Brigham Young sets the laws of the United States and of morality at defiance.

Capes and Islands.—See under "North America."

Gulfs, Bays, and Straits.—Penobscot Bay, in S. of Maine; **Massachusetts Bay**, E. of Massachusetts; Delaware Bay, between New Jersey and Delaware; Chesapeake Bay, between Maryland and Virginia; Albemarle Sound, E. of N. Carolina; Bahama Channel, or Strait of Florida, between Florida and Cuba; Appalachee Bay, N.W. of Florida; Monterey, San Francisco, and Humboldt Bays, W. of California; Strait of Juan de Fuca, N. of Washington Territory.

Mountains.—See under "North America."

Table of Rivers and Towns.—The annexed Table exhibits in detail the river-system of the United States, Canada, and Northern Mexico, together with the natural position of the principal cities and towns contained in their basins.

1. *Basins inclined to the Atlantic Ocean.*

Rivers.	*Towns.*
St Lawrence,	Quebec, Three Rivers, Montreal, Kingston, Toronto, Oswego, Hamilton, Niagara, Buffalo, Cleveland, Sandusky, Detroit, Milwaukee.
Ottawa, *l.*	Montreal, OTTAWA.
Thames, *l.*	London.
Grand River,	LANSING.
Penobscot,	Bangor.
Kennebec,	AUGUSTA.
Casco Bay,	Portland.
Piscataqua,	Portsmouth, Dover.
Merrimac,	Lowell, Manchester, CONCORD.
Massachusetts Bay,	SALEM, Charlestown, Cambridge, BOSTON.
Cape Cod Bay,	*Plymouth.*
Buzzard Bay,	New Bedford.
Narragansett Bay,	Newport, PROVIDENCE.
Connecticut,	HARTFORD, *Hanover.*
Seehouk, *l.*	Worcester.
Long Island Sd.,	NEWHAVEN.
Hudson,	Brooklyn, New York, ALBANY, Troy.
Mohawk,	Utica.
Delaware Bay,	DOVER, n.
Delaware R.,	Wilmington, n., Philadelphia, Camden, TRENTON.

1. *Basins inclined to the Atlantic Ocean* (continued).

Rivers.	*Towns.*
Schuylkill,	Reading.
Chesapeake Bay,	Annapolis, Baltimore.
Susquehanna,	Harrisburg.
Potomac,	Washington.
Rappahannock,	*Fredericksburg.*
James River,	Richmond.
Appomattox,	Petersburg.
Elizabeth R.,	Norfolk, Portsmouth.
Neuse,	Raleigh, n.
Cape Fear R.,	Wilmington.
Congaree,	Columbia.
Co. S. Carolina,	Charleston.
Savannah,	Savannah.
Altamaha,	Milledgeville.
Co. of Florida,	*St Augustine, Pensacola.*

2. *Basins inclined to Gulf of Mexico.*

Ocklokonee,	Tallahassee, n.
Chattahoochee,	Atlanta.
Alabama,	Mobile, Montgomery.
Pearl,	Jackson.
Mississippi,	New Orleans, Baton Rouge, *Natchez*, Memphis, St Louis, Alton, Galena, n., Du Buque, St Paul.
Red River,	Fort Washita.
Arkansas,	Little Rock, *Van Buren.*
Ohio, *l*	New Albany, Louisville, Cincinnati, Wheeling, Parkerburg, Pittsburg.
Cumberland, *l*	Nashville.
Wabash,	Indianapolis, n.
Kentucky, *l*	Frankfort.
Miami,	Dayton, n.
Scioto,	Columbus.
Gt. Kannawha,	Charleston.
Missouri,	Alton, Jefferson, Lincoln, n., Omaha, Yankton, Helena.
Kansas,	Lecompton, Topeka.
Platte,	Denver, Cheyenne.
Yellowstone,	Fort Union.
Illinois, *l*	Springfield, n.
Des Moines R.	Des Moines.
Iowa,	Iowa City.
Rock R., *l*	Madison, n.
Co. of Texas,	Galveston.
Colorado,	Austin.
Rio Grande del Norte,	Matamoros, Santa Fe, n.
San Juan,	Monterey, Saltillo.
Sabinas,	Santa Rosa.
Conchos,	Chihuahua, n.
Santa Fé, *l*	Santa Fe.
Santander,	N. Santander, Victoria, Zacatecas, n.
Panuco,	Tampico, Valles, San Luis, n., Pachuca.

3. *Basins inclined to Pacific Ocean.*

Nasca,	La Puebla, Tlascala.
Santiago,	Guadalaxara, Tepic, n.
Lerma,	Guanaxuato, n., Morelia, n., Leon, n., Salamanca, Queretaro, n., Toluca.
Culiacan,	Culiacan, Durango.
Sinaloa,	Sinaloa.
Sonora,	Ures, Sonora, Arispe.
Rio Colorado,	*Ft. Yuma*, Ft. Tucson, n.
W. Co. Mexico,	Tehuantepec, Acapulco, Tepic, n., Mazatlan, La Paz.
Sacramento,*	San Francisco, Sacramento City.
Columbia,	Pacific City.
Williamette, *l*	Portland, Salem.
Snake,	Boise City.
Strait of Juan de Fuca,	Victoria.
Puget Sound,	Olympia.
Frazer,	New Westminster.

Lakes.—The lakes of the United States are neither numerous nor extensive, if we except those magnificent fresh-water seas in the basin of the St Lawrence, which separate it from Canada, and which we have noticed under that country.

The other principal lakes are *L. Champlain*, between New York and Vermont, drained by the Richelieu, but connected by a canal with the Hudson; *Red Lake* and *Itasca*, in Minnesota, the latter forming the

* On its affluent, the Merced, are the Yosemité Falls (2600 ft.), the highest in the world.

source of the Mississippi; and *Pontchartrain*, in Louisiana, in the delta of that river. Of those belonging to the great continental basin, or that have no visible outlet, we need only enumerate the *Great Salt Lake*, in the territory of Utah, and *L. Tulare*, in California. The entire surface of New England is dotted with beautiful and transparent lakes, the principal of which are Moosehead Lake in Maine, drained by the Kennebec, and Winnipiseogee in New Hampshire, which discharges its waters into an affluent of the Merrimac.

Climate.—The climate of the United States is necessarily very diversified, owing to the vast extent and great variety of the surface. In general, however, it is *excessive*, being characterised by greater heat in summer and greater cold in winter than any other country of corresponding latitude.

New York, for example, has the summer of Rome and the winter of Copenhagen; though it is one degree farther S. than the former, and 15° than the latter. The mean annual temperature, however, is greatly less than in corresponding latitudes in the Old World. In the New England states, where the latitude corresponds with that of Northern Italy, the winter is so severe for three or four months of the year, that the snow is sufficient for the employment of sledges, and the ice of the rivers strong enough to be crossed by horses and waggons. This is the coldest section of the United States, as it not only lies in the northern part of the country, but is also exposed to the cold N.E. winds of the Atlantic. In common with all the other eastern states, it is abundantly supplied with moisture, as it lies in the path of the S.W. winds from the Gulf of Mexico. The mean annual temperature of New York is 51°.7, mean winter 31°.4, and mean summer 72°.3. The climate of the South Atlantic and Gulf states is almost tropical, and, except in western Texas, quite moist. New Orleans, in this section, has a mean annual temperature of 69°.8, winter 55°.8, and summer 82°.04. The central states are subject to great extremes of heat and cold, being exposed in summer to the hot winds from the Gulf of Mexico, and in winter to cold winds from the Arctic regions and the Atlantic Ocean. The greater part of these states lies in the region of abundant rains, but much of the country between the Mississippi and the Rocky Mountains is subject to long summer droughts, and is hence consigned to the sole use of the Red Indian. The Pacific coast is much warmer than the eastern, the mean annual temperature ranging from 60° to 50° Fah., that of January from 50° to 40°, and that of July from 80° to 60°. The region west of the Sierra Nevada and Cascade ranges has abundance of moisture, especially in the north; but to the east of these ranges the climate is characterised by great drought, the vapours from the Pacific being intercepted by the mountains. The rainiest districts in the Union are Florida, the low flats of the Mississippi, then along the course of its valley, then Iowa and the high grounds of the Missouri districts, and lastly, the elevated plateau between the Rocky Mountains and the Sierra Nevada. The rainfall at Pensacola, in Florida, is 57 inches; Monrosville, in Alabama, 66; Mobile, 64; Natchez, 58; Jackson, 53; Rapidas, in Louisiana, 63; New Orleans, 52; Nashville, 53; Savannah, 48; Fort Madison, in Iowa, 50; Jefferson, in Missouri, 38. The average fall of rain over the Union is 37½ inches, but the average number of rainy days is smaller than in Europe.

Geology.—Much obscurity still attaches to the geology of the United States, owing in part to the vast extent of the area, a large

portion of which is still in the wildness of nature, and a still greater portion but thinly peopled; and in part to the comparative paucity of explorers. In so far, however, as this immense territory has been investigated, it appears that, in a geological point of view, it differs very considerably from those portions of the Old World which have received the greatest attention. The sequence of formations is not so complete as in Europe, there being several important geological periods—for example, the Permian, Triassic, and Wealden—that have left no visible monument behind. But, while thus deficient in some members of the series as developed in Europe, it is apparently more full in the subordinate formations of some groups which the two continents possess in common.

Crystalline rocks occur extensively on the Atlantic slope from New Brunswick to Alabama, especially in the New England states and the eastern half of New York, where they are largely interspersed with granitic rocks: they also cover very extensive areas in Wisconsin and Minnesota; while the great mountain-chains of the country—the Rocky Mountains, the Alleghanies, and the Ozark Mountains—are for the most part built up of them. Silurian strata are supposed to underlie more recent formations throughout the entire basin of the Mississippi, but appear at the surface chiefly in the following localities:—A considerable tract in the state of Maine, extending from the capital to New Brunswick; the western flank of the Alleghanies, along their entire length; an immense circular area of about 130 m. in diameter in the states of Ohio, Indiana, and Kentucky, having for its centre the city Cincinnati; a smaller oblong area in Tennessee, on the south side of the river Cumberland; the northern border of New York adjoining Lake Ontario, and extending from the Hudson to the Falls of Niagara; and, lastly, an immense tract south of Lake Superior, extending from Lake Michigan and the Canadian frontier to the Missouri. The Devonian system is highly developed, not only in regard to the vast thickness of the strata and the great extent of country which they cover, but also in regard to the great variety of its organic contents. The most extensive tract of Devonian strata, so far as yet known, is that which is bounded on the N. by Lakes Michigan, Huron, and Erie, and on the W., S., and E. by the Illinois, Tennessee, and Hudson respectively. The Carboniferous system is also very extensively developed, especially in the eastern states between the Appalachian chain and the 97th meridian, and north of the 34th parallel. The carboniferous limestone, one of its members, occupies, moreover, a wide area in the upper basin of the Missouri, and in the continental basin, especially in Nebraska, Washington, Kansas, and Utah. The Secondary or Mesozoic Series, so highly developed in the continent of Europe, is, in America, mainly represented by the Cretaceous system, which, with its sands, clays, marls, soft grey limestones, and characteristic greensand, occupies by far the larger part of the western half of the Union, especially between the meridians of 97° and 112°. Tertiary deposits, including the Boulder Clay, prevail chiefly along the three great maritime frontiers—from Long Island to Florida, from Florida to Mexico, and from Lower California to Vancouver Island—and generally extend inland from 100 to 150 m.; but in the lower basin of the Mississippi their width cannot be less than 450 m. A large portion of the continental basin, together with numerous detached tracts in Nebraska, are also covered with tertiary deposits.

Minerals.—The crystalline rocks in many parts of the Union are peculiarly rich in metallic ores. In the Atlantic slope they contain numerous veins of the ores of lead, copper, zinc, iron, and other metals. They also form the matrix of the gold of California and the South Atlantic states, and of the great masses of copper ore on the borders of Lake Superior.

The gold-field of California is one of the richest in the world, and yields only to those of Australia. The gold was accidentally discovered in 1848 on the banks of the Sacramento. The total yield of the precious metals in the Union in 1871 was 66,633,000 dollars, of which California produced 20,000,000, Nevada 22,500,000, and Montana 8,000,000. The same region yields also iron, lead, copper, silver, mercury, coal, diamonds, and marble. Mercury is also found in Kentucky, Ohio, and on the borders of the great lakes. Rich lead mines are worked in Illinois, Wisconsin, and Missouri. Masses of nearly pure copper have been obtained from the Lake Superior mines, and a whole mountain of iron ore exists in Missouri. Zinc is found in considerable quantities in Arkansas, and valuable beds of gypsum have recently been discovered in Michigan, on the shores of Lake Huron. Salt abounds in the plateau-region of Utah, as well as in many other parts of the United States, and the salt-springs of New York produce upwards of 5,600,000 dollars value per annum. The Palæozoic rocks, so enormously developed between the Appalachian chain and the river Missouri, are remarkably rich in coal. The principal coal-fields are: (1.) The great Appalachian coal-field, extending from Pennsylvania to the Tuscaloosa, in Alabama, embracing an area of 70,000 sq. m., and attaining a maximum thickness of 2500 ft. (2.) The coal-field of Michigan, near the centre of that state. (3.) The great coal-field lying between the Ohio and the Mississippi. (4.) The Iowa and Missouri coal-field, occupying the immense triangular space which is bounded by the Mississippi, the Missouri, and the Iowa rivers. The united area of all the coal-fields in the United States is estimated at 190,000 sq. m., which exceeds twenty-fold all the coal-deposits of Europe. In 1874 there were raised in the Union 45,413,000 tons of coal, of which 33,000,000 tons were produced by Pennsylvania. There are also numerous and inexhaustible beds of iron ore, especially in the Alleghanies, Pennsylvania alone producing more than one-half of the rolled iron of the states. Great quantities of petroleum or rock-oil are also obtained from this state.

Botany and Agriculture.—The vegetation of the United States, with the exception of the portion lying W. of the Rocky Mountains, is comprised within Schouw's *fourth* and *fifth* Botanical Regions (p. 55).

The former of these, or the *Region of Asters and Solidagos*, extends from the 35th parallel to Lake Winnipeg and St James's Bay, and consequently embraces a large section of British America. This extensive region is mainly characterised by the great number of species belonging to the genera from which it derives its name; by the great variety of its oaks and pines; and by the total absence of the heath tribe. In 1843, the number of known indigenous flowering plants in this portion of the United States was 1966 species. The cultivated plants are in general the same as in Great Britain, Central Europe, and Canada, and consist chiefly of wheat, maize, flax, hemp, hops, potatoes, tobacco, the vine, and fruit-trees in great abundance. The central states are the great corn-produc-

ing countries, particularly Illinois, Indiana, and Wisconsin. The region lying between lat. 35° and the Gulf of Mexico, and between the Atlantic Ocean and the Rocky Mountains, is termed the *Region of Magnolias*, as it is mainly characterised by plants of this order, so remarkable for their large odoriferous flowers, and for the tonic qualities of their bark. The cultivated plants of this region are chiefly the vine, olive, fig, orange, sugar-cane, cotton, tobacco, rice, wheat, maize, and other grains. The cotton plant is cultivated chiefly in South Carolina, Georgia, and the adjacent states, the total crop for 1873 being 3,930,508 bales of 4 cwt. each. In the same year the total export of cotton to the British market amounted to 840,000,000 lb., valued at £31,544,000. Tobacco is grown chiefly in Maryland, Virginia, Kentucky, Tennessee, and North Carolina, the total produce in 1871 being estimated at £263,196,000 lb. Rice is grown principally in South Carolina, and the sugar-cane in Louisiana, Florida, and Georgia. The culture of the vine has made considerable progress, especially in Ohio, Pennsylvania, Indiana, and California, where also the olive and orange succeed. In order to form an accurate idea of the staple productions of the Union, let us take a voyage up the Mississippi, from its mouth to its source in Minnesota. In Louisiana we find the sugar-cane, orange, fig, rice, cotton, maize, sweet-potato, and forests of pitch-pine with their turpentine orchards. As we ascend the river to the middle of Tennessee, about lat. 36°, we enter the district of the sugar-maple, sorghum or Indian millet, peach, and other stone-fruits, wheat, the vine, hemp, and tobacco. Proceeding still farther up the river, to the states flanking the great lakes, the climate begins to get too cold for agricultural pursuits, except the production of wheat, oats, the Irish potato, apples, live stock, dairy produce, beef, and pork. Throughout the whole of the northern and eastern states agriculture is pursued with great skill, and excellent machinery is used in every department of the operation. Hence much larger crops are produced than if all the work was done by the hand.

Zoology.—Comparatively few wild animals are now found in the United States. As the country is being settled they gradually disappear, and, except the smaller and inoffensive species, are now confined to the forests of the Alleghanies, the western part of the Mississippi basin, and the Rocky Mountain region. The quadrumana, edentata, and pachydermata, are unknown in the United States; the marsupialia are represented by one species of opossum; the carnivora by numerous species of bats, hedgehogs, racoons, coatis, badgers, martens, skunks, otters, foxes, and by the puma or cougar, which may be regarded as the lion of the New World; the ruminants embrace the moose-deer or American elk, the antelope, the argali of the Rocky Mountains, and the American bison, which in vast herds roams over the wide prairies of the west; while the rodents include the beaver, musquash, and numerous other species belonging to the squirrel, mouse, porcupine, and hare tribes. In 1867, the number of mammals in the single state of Iowa (a prairie state) was 48 species. The domestic animals have all been introduced from Europe. Among these, swine take a prominent place in the maize-producing states.

The birds are very numerous, and have been ably and beautifully illustrated by Wilson, Audubon, and others. Great numbers of wild

turkeys, partridges, and quails are found in the prairies. Reptiles abound, and belong to every order: tortoises and frogs are especially numerous; the lizards include the alligator or cayman; and the serpents, which are about 40 in number, the deadly rattlesnake. In 1842, the number of known fishes was 440 species. The fresh-water fishes, especially in the Ohio, are extremely numerous; while the rivers, lakes, and sea-coasts abound with a surprising number of molluscous animals, especially bivalves. The oyster trade of Baltimore is so large as to constitute a separate branch of industry; and it has been estimated that the fish and fowl obtained from the Chesapeake alone are worth nearly as much as the gold of California.

Ethnography.—The people of the United States belong to four great divisions of the human family—Caucasians, Negroes, American Indians, and Mongolians.

The Caucasians, or Whites, who embrace about six-sevenths of the entire population, are mainly of British and Irish extraction; but Germans, Dutch, and French are also numerous. In the New England states, the inhabitants are nearly all of British origin; Dutch and Irish are numerous in the central states; Germans in Pennsylvania, New Jersey, New York, Illinois, and Wisconsin; French in Louisiana, Missouri, and Indiana; and Spaniards in Texas, Florida, and California. The negro population are of African descent, and, including about 4,500,000 freedmen, form one-eighth of the entire population. They are most numerous in the states south of the Potomac and Ohio, where slavery with all its hateful concomitants was upheld by law till 1863, when slavery was abolished throughout the entire Union. In some states, as South Carolina and Mississippi, the negroes form a majority of the population, while in others they amount to a very large minority. The Indians, or aborigines, have greatly decreased in number since the discovery of America by Europeans, at the end of the fifteenth century. They are scattered over 20 states and territories, besides the Indian territory, which Congress has set aside for their permanent residence, and now number only 383,000. Large numbers of Chinese and Japanese have recently entered the Pacific states, where they are engaged as labourers and servants. The English language is predominant everywhere; but about 4,000,000 Germans, as also many of the Irish, French, Spaniards, Chinese, and Indians, continue to speak their mother tongues.

Languages, Education, and Religion.—The English language is predominant throughout all parts of the American Union; but foreigners and all the Indian tribes continue to speak their respective native tongues. Education is universally diffused, and a larger proportion of the people can read and write than in any other country, whether of the Old or New World. High schools and grammar schools are numerous, and there are throughout the Union no fewer than 120 colleges and universities. The oldest of these is Harvard University, Massachusetts, founded in 1636, and possessing the largest library in America. The Americans are remarkable for their intelligence and enterprise, and the skill with which they carry on all the pursuits in which they engage. Many great and useful inventions have been made by them, among which may be enumerated the lightning-rod, invented by Franklin in 1752; the electric telegraph; the first successful steamboat was constructed in the United

States, and its trial trip made in the Hudson; the cotton-gin, for separating the seeds from the fibres; the sewing-machine; and innumerable improvements in agricultural implements. Christianity, in one or other of its forms, is the only religion known in the United States, with the exception of Mormonism in the territory of Utah; but the variety of sects is enormous. The most important sects are the Methodists, Baptists, and Presbyterians, who number about four, three, and two millions respectively. After these rank the Congregationalists, Episcopalians, Roman Catholics, and Lutherans, none of which far exceeds half a million adherents. None of the denominations is endowed by the State, the ministers and churches being supported by the voluntary contributions of the people.

Literature.—The nation being still in its infancy, its literature is not very extensive. The progress already made, however, in every department of learning, is truly remarkable. Nowhere is science cultivated with greater zeal, and nowhere are its votaries more highly honoured. The quarterly journals and other periodicals are numerous, and conducted in general with great ability. Of the many distinguished names that adorn the literature of the United States we can mention only a few examples:—

POETRY: Bryant, Dana, Halleck, Hillhouse, Longfellow, Morris, Peabody, Percival, Pierpont, Mrs Sigourney, Wilcox, N. P. Willis. STATESMEN: John Quincy Adams, Clay, Franklin, Hamilton, Jay, Jefferson, Lincoln, General Washington. HISTORY: Bancroft, Drake, Washington Irving, Motley, Prescott, Ramsay, Wheaton. GEOGRAPHY AND TRAVELS: Catlin, H. T. Cheever, Flint, Guyot, Lewis and Clarke, Morrell, Olmstead, Robinson, Schoolcraft, Steven, Stewart, Taylor, Warriner. PHYSICAL SCIENCE: Audubon, Bowditch, Dana, Hall, Hare, Hitchcock, Maury, Michaux, Morton, Newcombe, Olmstead, Pierce, Wilson. MENTAL AND MORAL SCIENCE: Adams, Day, Henry, Lieber, Rauch, Schmucker, Tupper, Upham, Wayland. THEOLOGY: Alexander, Barnes, Beecher, Bush, Channing, G. B. Cheever, Dwight, Edwards, B. B. Edwards, Emmons, Hodge, Hopkins, Mason, T. Parker, Payson, Pond, Prime, Skinner, Stowe, Todd, Woods. ECCLESIASTICAL HISTORY: Hawks, Murdock, Pond, Rauch, Rupp. CLASSICAL AND ORIENTAL LITERATURE: Anthon, Bush, Connant, Crosby, Felton, Leverett, Nordheimer, Robinson, Riggs, Sophocles, Stuart, Turner, Woolsey. ROMANCE: Brown, Cooper, Irving, Miss Sedgwick, Mrs Stowe. ORATORS: J. Q. Adams, Everett, Daniel Webster. FINE ARTS: Allston, Greenough, Trumbull. ENGLISH LITERATURE AND MISCELLANEOUS: Abbott, Agnew, Cass, Delafield, Drake, Emerson, Irving, Mather, M'Cauley, M'Culloch, Tucker, Noah Webster.

Government, Army, and Navy.—The government of the United States is a confederated republic, based on the constitution of 1787; but each state is independent in the management of its internal affairs, and possesses a legislature and executive of its own.

The *general government* is called the Congress, which consists of a president, senate, and House of Representatives, and meets annually at Washington, the capital of the Union, on the first Monday of December. The President is elected for a term of four years. He must be a native-born citizen of not less than thirty-five years of age. He enjoys a salary

of 50,000 dols., with an official residence; and is assisted in the government by a vice-president, chosen in the same manner as himself, and by a cabinet of six ministers of his own selection. He is commander-in-chief of the army and navy, and, with the concurrence of the senate, declares war, makes peace, and appoints ambassadors, judges, and other officers. The present president, Ulysses Grant, born in Ohio in 1822, who acceded to office on the 4th of March 1869, is the eighteenth individual who has held that high office. The senate consists of two members from each state, who are chosen by the legislatures of the different states for a term of six years, one-third of the number retiring biennially. The vice-president, who has a salary of 10,000 dols., is the president of the senate. The House of Representatives consists of one member for every 93,423 inhabitants; the present number being 292. They are chosen biennially by the citizens of the several states, in all of which the suffrage is universal. Their duties and functions nearly correspond to those of the members of the British House of Commons. No bill becomes a law until passed by both Houses and approved by the president. The president may also veto any act of Congress; but it may yet become law if re-enacted by two-thirds of both Houses. Each of the territories enjoys the privilege of sending one delegate to Congress, who has a right to speak, but not to vote. In 1875, the actual strength of the regular army amounted to 27,525 men of all grades; but during the late civil war, probably not less than half a million combatants on either side were drawn up in deadly array against each other. The total military expenditure for 1869 was 80,474,545 dols. The naval force in 1874 consisted of 48 ironclads, 63 steamers, and 26 sailing vessels, carrying in all 2406 guns. The navy estimates for 1871 amounted to 28,205,000 dols. The national income is mainly derived from taxes on property, land sales, and customs duties. The total amount of income for 1875 was £79,400,000; the expenditure, £63,800,000; and the public debt, £425,000,000. In December 1857 the debt amounted to only 25,000,000 dols. The enormous increase since is to be attributed to the civil war.

Manufactures and Commerce.—The industrial pursuits of the people may be reduced to three leading heads—Agriculture, Manufactures, and Mining—which have their principal seats in the Mississippi, Appalachian and Rocky Mountain regions respectively. At present agriculture is more extensively carried on than either of the others, as the resources of the manufacturing and mining regions are not yet fully developed. The great agricultural staples of the Southern States are cotton, rice, sugar, and sweet-potatoes; those of the Northern States being the different grains, Irish potatoes, and hay. Manufactures are most extensively carried on in the north-eastern states, owing to the abundant water-power in that region. The chief manufactures are iron and cotton, in which the United States rank second only to Great Britain. In the manufacture of iron, the states that rank first are Pennsylvania, New York, and Ohio; while New Hampshire and Massachusetts rank first in cotton. California, Nevada, and Montana, in the precious metals. Owing to the deep indentations of the eastern coast, the numerous navigable rivers of the interior, the magnificent lakes that skirt the northern frontier, and the vast network of railways which is spread over the country, the commercial facilities of the United States stand per-

haps unrivalled among the nations, while the actual extent of its trade is second only to that of Britain. The foreign trade, though shared in by all the states, is principally confined to the nine north-eastern states, among which New York and Massachusetts stand pre-eminent. The exports consist almost entirely of agricultural produce, especially wheat, flour, rice, cotton, tobacco, maize, pork, hams, butter, and cheese. The total exports from the country in 1874 amounted to £138,606,000, two-thirds of which went to Great Britain and Ireland, the rest being taken principally by Canada, the British West Indies, and Germany. In 1860, immediately before the civil war, the amount of cotton sent to the British market was 1,115,000,000 lb.; in 1863, it fell to 6,000,000; but in 1873 it again rose to 882,537,000 lb., of the computed value of £31,544,000. The imports in the same year amounted to £119,172,000, the chief items being sugar, woollen goods, iron and steel, silk, fine cotton, flax, coffee, tea, and breadstuffs. The imports from the British Isles amounted to £47,000,000. The domestic commerce is greater than even the foreign, owing to the unparalleled facilities in inland communication which this country affords. The grand artery of internal commerce is the Mississippi, which sends its ramifications into almost all parts of the Union. These natural facilities are supplemented by canals, the most important of which is the Erie Canal, which, connecting the Hudson with Lake Erie at Buffalo, unites the great lakes with the Atlantic. Several other canals connect the Mississippi with the great lakes, as the Ohio, Miami, Wabash, and Illinois canals; while the Pennsylvania Canal, between the Ohio and the Delaware, connects the Mississippi with the eastern seaboard. The railway system of the United States dates from 1827, when the first line was opened at Quincy, Massachusetts. At the end of 1851 there were 8589 miles of railway open for traffic; while on the 1st January 1874 there were no fewer than 72,623 miles open, besides 27,507 projected or in progress. The average cost of construction has been 40,000 dols. per mile. The Great Pacific Railroad, connecting San Francisco and Chicago with New York, *vid* Omaha in Nebraska, by far the most gigantic undertaking of the kind in existence, was finished in May 1869. The total length of the line, from San Francisco to Omaha, is 1914 miles (see above, p. 540). As yet, this is the only important line of railroad west of the Missouri; but the vast area lying between that river and the Atlantic, and from the Ohio to the great lakes, is one unbroken network of railways.

HISTORICAL SKETCH.—This portion of the continent was discovered by Columbus in 1492. About twenty years afterwards the Spaniards took possession of Central America; after which, crossing the Gulf, they entered Mexico (of which Texas then formed a part), and finally settled in Florida, while their possession on the Pacific coast extended to near the Columbia river. The French entered the continent by the G. of St Lawrence in 1535, and some time thereafter took possession of the basin of the Mississippi down to the G. of Mexico. The first permanent English settlement was made at Jamestown, Virginia, in 1607, or more than

a hundred years after the discovery of the continent; and the next at Plymouth, Massachusetts, in 1620; while in 1774 England possessed no fewer than thirteen flourishing colonies on the Atlantic seaboard. In 1614, the Dutch founded the settlement of New Amsterdam, at the mouth of the Hudson, but were expelled by the English in 1664, who changed the name of the settlement to New York. The English now took possession gradually of the entire Atlantic slope; after which they penetrated westward, and drove out the French from the basins of the Mississippi and St Lawrence. They conquered Canada in 1754, and in 1763 the French gave up all claim to the lands east of the Mississippi, with the exception of New Orleans. Owing to fiscal disputes between the British Government and its colonies, the latter became disaffected, and held a congress at Philadelphia in 1774. The English Parliament asserted the right of the Crown to tax the colonies even without representation. This led to the War of Independence, which commenced with the battle of Lexington, 19th April 1775, and ended with that of Yorktown in 1781, when Lord Cornwallis, the British commander, surrendered to General Washington. Peace was declared in 1783, Great Britain acknowledging each of the thirteen colonies to be a free, sovereign, and independent republic. The present American constitution was adopted in 1789, when General Washington was chosen as the first President of the United States. In 1803, the United States purchased from the French Louisiana and the whole French region west of the Mississippi. In 1821, Florida was ceded by Spain. In 1845, Texas, having rebelled against Spain, was admitted into the Union; while California was ceded by Mexico in 1848. Great prosperity succeeded these acquisitions, until 1861, when, owing to the great question of abolishing the slave trade, the Southern States—thirteen in number—seceded from the Union, and formed themselves into a Confederate Republic, with Richmond as their capital, and Jefferson Davis as their president. After a lengthened contest of the most sanguinary character, the fleets and armies of the Northern States at length triumphed, and slavery was finally abolished. The country is now recovering its former prosperity. Alaska, formerly Russian America, was purchased from the Russian Government in 1867.

MEXICO.

Boundaries.—N., Texas, New Mexico, and California; W., the Pacific Ocean; S., the Pacific, Guatemala, and Belise; E., the Caribbean Sea and Gulf of Mexico. Lat. 15° 40′—32° 47′ N.; lon. 87° 4′—117° 8′ W.

The city Durango, cap. of the state of same name, is situated almost exactly in the centre of this extensive area, and on the same parallel with San Salvador in the West Indies, Mourzouk the cap. of Fezzan, Muscat, Bhopal, Dacca, Canton, and the Sandwich Islands. The form resembles a cornucopia, with its mouth directed towards the north. The extreme length, from the head of the G. of California to Central America, is 1800 m.; the extreme breadth, from C. Corrientes to C. Catoche, amounts to 1300 m., but across the Isthmus of Tehuantepec it does not exceed 137 m.

Area and Population.—The area is estimated by the most recent authorities at 773,125 sq. m., or six times the area of the British Isles. In 1873 the population, including Yucatan, was estimated at 9,276,079, or 1½ times the population of Ireland.

Political Divisions.—Up till 1865 the confederation consisted of 27 states, 2 territories, and 1 federal district, making in all 30 political divisions. These are now subdivided into 50 departments, which are in general named after their capitals. For historical and other reasons, we prefer adhering to the old arrangement.

NORTHERN STATES.

LOWER CALIFORNIA (Ter.)—La Paz 1 (S.E. coast).

SONORA.—Ures 7, Pitic 8, Sonora 8, Arispe 7 (Sonora).

CHIHUAHUA.—Chihuahua 12 n. (Conchos, *affl.* Rio del Norte).

COAHUILA.—Saltillo 8 (San Juan), Santa Rosa 10 (Sabinas).

NEW LEON.—Monterey 14 n. (San Juan, *affl.* Rio Grande).

TAMAULIPAS.—Victoria 6, New Santander 6 (Santander), Matamoros 20 (Rio Grande del Norte).

SAN LUIS POTOSI.—San Luis Potosi 34 n., Valles 4 (Panuco).

ZACATECAS.—Zacatecas 31 n. (Santander).

AGUAS CALIENTES.—Aguas Calientes 23 (Santiago).

DURANGO.—Durango 12 n. (Culiacan), San Juan 10 n. (Nasas).

SINALOA.—Culiacan 10 (Culiacan), Sinaloa 10 (Sinaloa), Mazatlan 15 (W. coast).

CENTRAL STATES.

XALISCO.—Guadalaxara 70 n., Tepic 25 n. (Santiago).

COLIMA.—Colima 32 (Colima).

MICHOACAN.—Morelia 37 n. (Lerma), Zamora 6 (L. Chapala).

GUANAXUATO.—Guanaxuato 63 n., Leon 80, Salamanca 15 (Lerma).

QUERETARO.—Queretaro 48 n. (Lerma), San Juan del Rio 10 (Pate).

MEXICO.—Toluca 12 (Lerma), Tezcuco 10 (L. Tezcuco).

FEDERAL DISTRICT OF MEXICO.—Mexico 230 (L. Tezcuco).

HIDALGO.—Pachuca 12 n. (Panuco).

MORELOS.—Cuernavaca 7 n. (Rio de Babzas).

TLASCALA.—Tlascala 4 (Nasca).

VERA CRUZ.—Vera Cruz 10, Tampico 7, Xalapa 37 n. (G. of Mexico).

PUEBLA.—La Puebla 67, Cholula 10 (Nasca).

SOUTHERN STATES.

GUERRERO.—Tixtla 5 n., Acapulco 5 (Pacific).

OAXACA.—Oaxaca 25 (Rio Verde).

TEHUANTEPEC (Ter.)*.—Tehuantepec 14 (Tehuantepec).

* Belongs to the United States.

CHIAPAS.—San Cristobal 10, Ciudad Real 7, Chiapas 15, Commitan 10 (Tabasco), *Palenque* n. (Usamasinto).

TABASCO.—San Juan Bautista 6, Tabasco (Tabasco).

YUCATAN.—Merida 24 n. (G. of Mexico).

CAMPEACHY.—Campeachy 15 (G. of Mexico).

Descriptive Notes.—**La Paz**, with a celebrated pearl-fishery in the vicinity, now nearly abandoned. **Sonora** and **Arispe** have rich gold and silver mines in their vicinity. It is said that the household utensils in Arispe are nearly all of pure gold. **Chihuahua**, surrounded by silver mines, has numerous smelting furnaces. **Saltillo**, a well-built, handsome, and important town, with extensive woollen manufactures, and a large annual fair. **Monterey**, the most important place in Northern Mexico: near it are valuable gold, silver, and lead mines. **Matamoros** exports specie, hides, wool, and horses. **San Luis Potosi**, an important town, maintaining an active home and foreign trade. **Zacatecas**, the principal mining city of the state of the same name, all the towns of which are extensively engaged in mining silver,—the neighbouring mountains being the richest in the world in that precious metal. **Aguas Calientes**, so named on account of the *hot springs* in its vicinity, is admirably situated for trade. **Durango**, a considerable place carrying on a good trade in cattle and leather, and having iron mines in the vicinity. **Mazatlan**, a cheerful, well-built town, greatly superior to any other on the Pacific coast of Mexico. **Guadalaxara** is, after Mexico and **Leon**, the most populous city of the Confederation. It was founded by the Spaniards in 1551, has well-supplied markets, and extensive manufactures of cotton shawls, and of jars made of scented earth. **Guanaxuato**, in the centre of one of the richest mining districts in the world, stands on the plateau of Anahuac, 6869 ft. above the level of the sea. **Queretaro**, noted for its magnificent aqueduct, 10 m. in length, and for the ratification of the treaty of peace in 1848 between Mexico and the United States. **Tescuco** derives its chief interest from historical associations, and from the remains of antiquity which it contains, especially three vast pyramids, and a palace said to be that of Montezuma, the last of the native Mexican princes. **Mexico**, cap. of the Mexican Confederation, is universally regarded as one of the finest and wealthiest cities in the world, though in population it does not much exceed Edinburgh. It is situated in a spacious plain of about 1700 sq. m. in area, at an elevation of 7468 ft. above the sea-level. When taken by Cortez, in 1521, it occupied several islands in the Lake Tezcuco, from which it is now 2½ m. distant. The churches and other public buildings contain a vast amount of wealth in statues, vases, candelabras, balustrades, &c., composed of the precious metals, and ornamented with diamonds and precious stones. **Pachuca**, cap. of the new state Hidalgo, is celebrated for its silver mines, the most valuable in Mexico. The existence of these mines was known to the Aztecs before the arrival of the Spaniards, and they were acquainted with the process of smelting the ores. **Vera Cruz** and **Tampico**, the principal seaport towns of the Confederation on the Gulf of Mexico. **Xalapa** gives its name to the drug *jalap*, which grows here wild. **La Puebla**, noted for its numerous churches, and its manufactures of soap, glass, iron, and steel. **Acapulco**, a seaport town on the Pacific coast, with a fine harbour, and rivalling Mazatlan in the extent of its commerce. It was once celebrated for the rich Spanish galleon which annually departed from it for Manilla laden with the precious metals of

Mexico, and returning with the products of Eastern Asia. **Oaxaca** has an active trade in sugar and cochineal. **Tehuantepec**, near the south side of the isthmus of same name, was in 1853, together with its territory, sold to the United States for 25,000,000 dollars. **Merida**, connected with its port, **Sisal**, by a good road, has a Moorish aspect, having been built at a time when that style prevailed in Spanish architecture. **Campeachy**, cap. of a new state of same name, and the principal seaport town of the peninsula, is strongly fortified, and has a good export trade in cotton.

Capes, Bays, and Gulfs.—See under "North America."

Mountains and Table-Lands.—The mountain-system of Mexico is altogether peculiar. Almost the entire country consists of an enormous plateau raised by volcanic forces to an elevation varying from 6000 to 9000 ft., and ramifying as the land grows wider into several diverging chains.

This plateau, known as the table-land of Anahuac, attains its highest elevation between the capital and Vera Cruz, or about the parallel of 19° N. In this latitude, and proceeding from E. to W., are the following lofty volcanic peaks—viz., Orizaba, 17,347 ft., now extinct; Popocatepetl, one of the loftiest peaks in North America, 17,884 ft.; Nevado de Toluca, 15,250 ft.; and Jorullo, which, on the night of 28th September 1759, rose from the level of the plain to a height of 4149 ft. All these, except the last, rise above the line of perennial snow, which in this latitude has an elevation of about 15,000 ft. North of Guanaxuato the elevated mass divides into three branches, the central of which bends to the N.N.W. till it enters the United States, and merges into the Rocky Mountains, about lat. 44° N. (See above, p. 506.)

Rivers and Lakes.—With the exception of the Rio Grande del Norte, on the N.E. frontier, the Santiago with its tributary the Lerma, and the Rio Colorado, which forms the boundary between Sonora and Old California, the rivers of Mexico are generally mere torrents, which, rushing from the elevated table-land, reach the sea after a short course. (For the towns, see table under "United States.") The lakes on the Mexican table-land are very numerous, and many of them of volcanic origin. The largest are *Chapala*, between Xalisco and Michoacan, 50 m. long; *Parras*, in Coahuila; *Tezcuco*, and four others, in the immediate vicinity of the capital; while several large salt-water lagoons fringe the coast of the Gulf of Mexico, the chief of which are *Tampico* and *Terminos*.

Climate and Vegetation.—Owing to the great elevation and semi-tropical position of Mexico, the climate is exceedingly various. Two regions, however, may be distinguished—the tropical (*tierra caliente*), and the temperate (*tierra templada*) or cool region.

The first embraces the low grounds on the east and west sides, to the height of 2000 ft., having a mean annual temperature varying from 68° Fah. in the N., to 78° in the S. It produces in abundance all the ordinary vegetation of the tropics, including maize, manioc, cocoa, pepper, vanilla, indigo, cotton, coffee, sugar-cane, and the banana; but the excessive heat and the great fall of rain render it almost uninhabitable. This region affords an admirable illustration of the maxim in physical geography, that wherever vegetation attains its most luxuriant develop-

ment, their human life languishes. An intermediate region of small extent embraces the slopes of the table-land to the height of about 6000 ft. Here the climate is mild and gentle, and the vegetation includes most of the cereals and fruit-trees of Europe. The cool region embraces the whole remainder of the country, including the vast table-land. The climate, though agreeable and healthy, is excessively dry, and the mean annual temperature at Mexico is 61°; while the vegetable productions include the Mexican oak, pine, agave, arbutus, dahlia, geranium, and cactus. Among cultivated plants may be mentioned the potato, which is extensively reared, and which in its wild state is sometimes met with at an elevation of 10,000 ft.; maize, wheat, barley, and Spanish pepper or capsicum, which is consumed by the inhabitants in enormous quantities. The cacao, from the seeds of which chocolate is made, and the vanilla, which imparts to the chocolate a peculiar flavour, together with the medicinal plants sarsaparilla and jalap, are indigenous to Mexico and the West Indies, and were found here growing spontaneously when the country was invaded by the Spaniards. Among the cultivated plants of Mexico there is none more important or characteristic than the maguey, from the sap of which is prepared the favourite drink of all classes, pulque; it thrives on the poorest soil, so that near a town or populous district a plantation of it always forms a valuable estate.

Minerals.—Mexico has long been celebrated for its minerals, and especially for the inexhaustible supply of the precious metals which it contains. To obtain possession of the latter was the great motive that led to the discovery and conquest of the country on the part of Spain early in the sixteenth century. More silver has been obtained from its mines than from all the rest of the world; while the produce of its gold mines has only been inferior to those of Peru, and latterly to those of California and Australia. The silver mines, which had been long neglected, were partly reopened in 1864. The most celebrated silver mines of Mexico are those of Pachuca and Real del Monte (situated about 60 m. from the capital, and belonging now to an Anglo-Mexican company), San Luis, and Guanaxuato. Gold abounds chiefly in Sonora and Oaxaca. In 1850, an extremely rich quicksilver mine was discovered near Pitic, in Sonora, which promises to give a new impetus to mining operations in Mexico. Valuable copper mines are also wrought in Chihuahua; iron ore is abundant in Durango; tin, lead, zinc, and antimony in several states: but, hitherto, coal has nowhere been found. Salt and carbonate of soda are obtained from several lakes.

Zoology.—The wild animals are exceedingly numerous, comprising the bison or American buffalo (which in mid-winter enters the country in immense herds from the forests of the north-west), the tapir, jaguar, puma, ocelot, tiger-cat, weasel, sloth, glutton, ant-eater, porcupine, grizzly bear, wild swine, and monkeys. The feathered tribes exist in countless numbers, and reptiles include the Mexican crocodile, the alligator, cayman, and rattlesnake. Perhaps the most useful animal in the Mexican fauna is the cochineal insect, which yields, next to the precious metals, the most important article of export. The domestic animals, with the exception of the turkey, a native of this region, were all introduced by the Spaniards; for, not-

withstanding the degree of civilisation to which the ancient Mexicans had attained, they did not possess the art of taming any of their wild animals.

Ethnography.—The population of Mexico is composed, as in other Spanish American states, of three distinct races—aboriginal Indians, Europeans, who are nearly all Spaniards, and Africans or Negroes, who were formerly in a state of slavery. Besides these there are various mixed races—mestizos, zambos, mulattoes, quadroons, &c.

The Indian population is by far the most numerous, being estimated in 1872 at 5,000,000: they form the great mass of the labouring population, are averse to the mechanical arts, and in many places assert a wild independence. The Europeans or whites are reckoned at about 1,000,000, and form the wealthiest and most powerful section of the community. The negroes do not exceed 6000, and are rapidly decreasing in number, notwithstanding the abolition of slavery. The *Mestizos*, formed by the commingling of European and Indian blood, number about 1,500,000, and are generally engaged in trade and mechanical pursuits.

LANGUAGES AND CIVILISATION.—Spanish is the universal language of the white population, and the general medium of intercourse; but no fewer than thirty-five distinct tongues are spoken by the various Indian tribes within the limits of Mexico. The chief of these is the Mexican or Aztec, which was the language of the semi-civilised tribes at the time of the Spanish conquest of the country. It possesses the same general characteristics as the other American tongues, and is closely allied to them in internal structure. The ancient Mexicans, Toltecs, and Yucatanese had attained to a very considerable degree of civilisation before the arrival of the Spaniards, in the early part of the sixteenth century. They possessed a regular monarchical government; they had stationary abodes, and pursued agriculture with success; maize was the staple crop, and cacao was cultivated for chocolate; mining was extensively practised, and the precious metals sold in the markets; they were well skilled in architecture, raised great edifices, constructed vast palaces, pyramids, roads, aqueducts, and bridges. The remains of sculpture found in Mexico are numerous, and of great variety of form and material. Feather-painting was a favourite art, in which the gorgeous plumage of tropical birds was employed to produce exquisitely-finished pictures. They had a more accurate calendar than the Egyptians, Greeks, or Romans; while the splendid ruins of Palenque exhibit medals, musical instruments, colossal statues, and well-executed figures in low relief, adorned with characters which appear to be real hieroglyphics. By means of these they were able to record many facts connected with their national history. They usually wrote on cotton cloth, on the prepared skins of animals, and on a species of paper made of the leaves of the great aloe, similar to that manufactured by the ancient Egyptians from the papyrus. Numerous manuscripts, executed in this mode of picture-writing, were committed to the flames by the Spaniards; but a few precious relics still survive in some of the libraries of Europe.

RELIGION.—The established religion, and, indeed, the only one recognised by the government, is the Roman Catholic; and though others are tolerated by law, yet, practically, innumerable restrictions are imposed on Protestantism. Almost the entire white population are devoted Roman Catholics, and, with few exceptions, the votaries of pleasure, profligacy, and crime. The Aztecs and other native tribes also profess a

nominal adherence to that Church, interweaving its ceremonies with the idolatrous rites of their ancestors.

Government and Finance.—From the conquest of the country, in 1521, till 1824, Mexico formed one of the four great Viceroyalties of Spanish America, and was sadly misgoverned. In the latter year, a representative, popular, and federal republic was adopted, which in many of its features resembled that of the United States.

The president was elected for four years. The legislative power was vested in a general congress, consisting of a Senate and Chamber of Deputies. The deputies were elected by the people for two years,—there being one for every 80,000 of the population. The laws were said to be excellent, but the continually-recurring insurrections and revolutions rendered the executive power little better than nominal. The state of civil war having apparently become chronic, Great Britain, Spain, and France resolved, in 1861, on an armed intervention. The two former powers abandoned the enterprise at an early period, but the French army, after experiencing many reverses, at length obtained possession of the capital, and set Duke Maximilian of Austria on the throne. After reigning three years, this heroic prince was, in 1867, betrayed into the hands of Juarez, the former president, and cruelly massacred. Juarez was then re-elected president, and the constitution of 1824 re-established. The republican army in 1867 numbered 35,000 men, but it does not now exceed 21,000. The navy consists of 9 small vessels, carrying, in the aggregate, 35 guns and 300 marines. The revenue in 1874 amounted to £3,700,000, the expenditure to £4,800,000, and the public debt to £79,100,000.

Commerce and Industry.—The commerce of Mexico is considerable. The exports consist of metals, cochineal, indigo, hides, cattle, cacao, vanilla, jalap, and a few other medicinal herbs. In 1874 the exports were valued at £6,338,000, of which £500,000 were sent to Great Britain. The imports in the same year amounted to £5,800,000, of which England sent £1,194,000 worth. These consisted chiefly of manufactured goods, earthenware, firearms, hardware, and machinery. The manufactures are unimportant, consisting chiefly of a little cotton, silk, and woollen cloths, soap and candles, gold and silver utensils, and ornaments. Agriculture is greatly neglected, and much of the land cultivated by the Spaniards is now lying fallow; but the natural fertility of the soil causes it to yield a sufficient supply for the wants of the inhabitants.

Inland Communication.—The roads are deplorably bad, and impracticable for wheel-carriages. The descent from the table-land to the sea is everywhere precipitous, and presents such difficulties in the way of carrying goods as will probably always cut off the interior states from a fair participation in the commerce of the globe. Mules are the only beasts of burden, and vast numbers of them are employed by carriers and in the mines. Railways are of limited extent. In 1874 there were 327 m. open for traffic. The principal line is that connecting the capital with Vera Cruz. Other 300 m. are in process of construction. The principal seaports are Campeachy, Vera Cruz, Tampico, and Matamoros, on the Gulf of Mexico, with Mazatlan and Acapulco on the Pacific coast.

CENTRAL AMERICA.

Boundaries.—N.W., Yucatan and Chiapas; S.W., the Pacific; E., the U. S. of Colombia and the Caribbean Sea. Lat. 8°—18° 30′ N.; lon. 82° 30′—93° W.

La Union, on Fonseca Bay, in the centre of the area thus indicated, is on the same parallel of latitude with the island of St Lucia in the West Indies, Bathurst in W. Africa, Lake Tchad, Aden, Madras, Bangkok, and the Philippine Isles; and on the same meridian as Mobile and Lake Michigan. The greatest length from N.W. to S.E. is about 900 m.; the breadth varies from 70 to 350 m.

Area, Population, and Political Divisions. — Central America comprises six states, five of which are independent republics, and one (Belize) a British colony. The united area is estimated at 188,000 sq. m., and the population (in 1874) at 2,605,410. Hence, though 1¼ times the size of the British Isles, the population is only two-thirds that of Scotland. (See Table of North American States.)

GUATEMALA.—New Guatemala 45 n. (Montagua), Quesaltenango 20 (Samala), Istapa (W. coast), St Thomas (E. coast).

SAN SALVADOR.—San Salvador 20 n., Sonsonate 8, Acajutla, La Libertad (W. coast), La Union (Fonseca Bay), Cojutepeque 15 n. (L. Ilopango).

HONDURAS.—Comayagua 8 n. (Ulua), Juticalpa 10 n. (Patook), Omoa 2, Truxillo 5 (G. of Honduras), Tegucigalpa 12 (Choluteca).

NICARAGUA. — Managua 10, Leon 25 n. (L. Leon), Granada 10, Nicaragua 8 (L. Nicaragua), Rialejo 5, Massaya 15 (Pacific), San Juan de Nicaragua, Blewfields (Mosquito coast).

COSTA RICA.—San José 25 n., Cartago 5 n., Alahuela 10 n. (Rio Grande), Punta Arenas (G. Nicoya), Port Culebra (Pacific).

BELIZE, or BRITISH HONDURAS.—Balize or Belize 5 (Balize).

Descriptive Notes.—**New Guatemala** is a mean-looking city, occupying a wide area, as the houses are all of one story, owing to the frequent earthquakes. The exports are numerous, consisting chiefly of sugar, cotton, coffee, cigars, dye-woods, and other native products. **Quesaltenango** ranks next to the capital for the extent of its trade and the variety of its manufactures. The chief exports are wheat, cacao, sugar, woollen and cotton fabrics. **Istapa** and **St Thomas** are the principal seaports of the state. **San Salvador**, newly rebuilt, after having been destroyed by a terrible earthquake in 1854, is again the cap. of state of same name. **Acajutla** and **La Libertad**, on the Pacific, with **La Union** on the Bay of Fonseca, are the principal seaports of San Salvador. **Comayagua**, formerly Valladolid, cap. of the state of Honduras, has a college and several convents. **Omoa** and **Truxillo** are the principal seaports of Honduras; the former is very unhealthy, and is the hottest place in the New World. **Tegucigalpa** has gold, silver, and copper mines in its vicinity. **Managua**, the present cap. of Nicaragua. **Leon**, the former cap., is now greatly decayed: its public edifices, which include a magnificent Gothic cathedral,

are regarded as the finest in Central America: the manufactures consist chiefly of articles of dressed leather and cutlery. **Nicaragua**, situated on the isthmus which separates Lake Nicaragua from the Pacific, is likely, ere long, to become a place of some importance. (See under "Lakes.") **Realejo**, the principal seaport of Nicaragua on the Pacific coast, commands some trade. **San Juan de Nicaragua**, or **Greytown**, in the tract of country known as the Mosquito Territory, exports hides, indigo, and tobacco: the harbour is one of the finest in Central America. The Mosquito Territory, which consists of the eastern coasts of Nicaragua and Honduras, is governed by an Indian chief, who is under the protection of Great Britain. Immense quantities of fine timber are found at various places along the coast, together with sarsaparilla and tortoise-shell of the finest quality. **San José**, cap. of the state Costa Rica, about midway between its opposite coasts, lies in a deep valley which is well watered by canals and fountains. **Cartago**, the former cap. of the republic, was a place of some importance prior to 1841, when it was nearly destroyed by an earthquake: near it is a mountain of same name, 11,480 ft. high, from the summit of which both oceans may be seen. **Punta Arenas** and **Culebra** are the two principal seaports of the state. **Belize** is the depot of British manufactures intended for Central America: exports—mahogany, rosewood, cedar, logwood, cocoa-nuts, fustic, and sugar.

Islands, Gulfs, and Bays.—Turneffe and the Bay Islands, in the Gulf of Honduras. Turneffe belongs to Britain, but the Bay Islands (the principal of which are Ruatan, Bonacca, and Utilla) were in 1856 proclaimed a free territory, under the sovereignty of the republic of Honduras. Gulf of Honduras, between Honduras and Belize; Mosquito Gulf, E. of Costa Rica; Bay of Fonesca, between San Salvador and Nicaragua; Gulfs of Nicoya and Dulce, W. of Costa Rica.

Surface and Mountains.—The surface consists for the most part of an immense table-land, which extends from the Isthmus of Tehuantepec to that of Panamá in the United States of Colombia. At its western extremity it attains an elevation of from 5000 to 6000 ft., but rapidly descends as it proceeds south-eastwards to the Isthmus of Panamá, where the highest point of the Panamá Railway connecting the Caribbean Sea with the Pacific is only 262 ft. above the level of the sea. The table-land is surmounted on the Pacific side by a chain of mountains, many of which are of volcanic origin; the volcano of Agua, in Guatemala, 13,000 ft. high, being the highest summit of Central America; Guanacaute, Viejo, and Masaya, in the state of Nicaragua, and Cartago, in Costa Rica, attain an elevation of about 12,000 ft. The slope inclining to the Pacific is abrupt and precipitous, but that which fronts the Caribbean Sea is gentle and gradual, terminating in the plain of Mosquito, which is described as a perfect level. The plain of Nicaragua is only 140 ft. above the level of the Pacific; while in the state of Honduras, between the Ulua and Goascoran, there occurs a complete gap in the cordillera, through which it is proposed to construct a railway from sea to sea.

Rivers and Lakes.—Owing to the narrowness of the isthmus, the rivers of Central America are all inconsiderable in magnitude. Of

those watering the longer slope and flowing towards the Caribbean Sea, the following are the principal: the Honda and Belize, in British Honduras; the Rio Dulce and Montagua, in Guatemala; the Ulua, Seco, and Poyais, in Honduras; the Segovia, between Honduras and Nicaragua; the Toacas and Escondido, in Nicaragua; and the San Juan, between Nicaragua and Costa Rica.

The principal lakes are those of Nicaragua and Leon or Managua, both of which are situated in the state of Nicaragua. Lake Nicaragua is 140 m. long, 40 m. broad, and has an elevation of 134 ft. above the level of the Pacific, or of 128 ft. above that of the Caribbean Sea—there being a difference of upwards of 6 feet between the level of both seas at low water. The tides on the Pacific side are considerable, amounting to about 27 ft., while on the opposite coast they rarely exceed 12 or 13 inches. The surface of Lake Leon is only 28 ft. above that of Lake Nicaragua, while between its western shore and the ocean is a neck of land, which, at its narrowest part, is only 11 m. across. For these and other reasons it has long been proposed to establish in the line of these lakes and rivers a ship-canal, uniting the two oceans, and thus obviating the tedious and dangerous navigation round Cape Horn.

Climate and Natural Productions.—The climate of the coasts and lower grounds is hot, moist, and insalubrious, especially along the Caribbean Sea; but dry, temperate, and healthy on the elevated table-lands. Owing to the extreme heat on both coasts, the greater number of the towns are situated on the lofty interior plateau.

The rainy season commences about the end of May and continues till the middle or end of October, when the rain falls in torrents, generally accompanied by violent thunder and lightning. The dry season lasts during the rest of the year, and is rarely interrupted by a single shower. Earthquakes are frequent in the interior, and numerous volcanoes, active and extinct, crown the table-lands, especially in Nicaragua. The soil is in general highly fertile, and the indigenous vegetation extremely luxuriant. The whole of Central America, with the exception of the higher elevations of the mountain-chains, is embraced within Schouw's fifteenth phyto-geographic region, otherwise called the region of Cactaceæ and Piperaceæ. (See p. 55.) Below the elevation of 3000 ft., indigo, cotton, sugar, cacao, rice, and tropical fruits, form the principal objects of culture; while maize, wheat, and the cochineal plant thrive at a higher elevation. Among other natural products may be mentioned tobacco, coffee, balsam, caoutchouc, potatoes, yams, beans, plantain, manioc, and sarsaparilla. The woods are very valuable, especially mahogany, rosewood, cedar, teak, Brazil-wood, logwood, and other valuable dye-woods. The mineral productions of the country are highly valuable, and include gold, silver, copper, iron, lead, zinc, and precious stones. The silver mines of Tobanco and Sociedad, and the gold mines of Capatillas, in San Salvador, are highly celebrated; while the silver mine of Tisingal, in Costa Rica, is said to have yielded as much wealth as those of Potosi in Peru. Rich iron mines and vast beds of brown coal exist in the valley of the Lempe. Gold, silver, and copper mining is extensively carried on in Honduras, where are also found iron, zinc, cinnabar, antimony, and platina, with amethysts, asbestos, chalk, limestone, white marble, and coal. The wild animals are extremely numerous and varied, embracing the puma, wolf, jaguar, wild-boar, black tiger, ocelot, tiger-cat, racoon,

opossum, tapir, peccary, fallow-deer, hare, sloth, squirrel, armadillo, and monkey. The other classes of the animal kingdom are all extensively represented (p. 58). The domestic animals are, for the most part, the same as in Europe.

Ethnography.—The population of Central America greatly resembles that of Mexico. The larger portion of the inhabitants are aboriginal Indians; probably fewer than one-tenth of the whole are of European origin; while the remainder, who are named *mestizos* or *ladinos*, are a mixed race, having sprung from the union of the white with the native Indian population. The whites are most numerous in Costa Rica and San Salvador. The negroes form but a small fraction of the population of Central America.

The Spanish language prevails over all Central America, being now spoken by the great mass of the Indian population, except in Guatemala, where the aborigines have evinced a greater tenacity for the dialects and customs of their forefathers. The Roman Catholic religion prevails everywhere, but the nunneries are open to the public, and the inmates can leave them when they please. A small portion of the Indian population in the different states, more especially in Honduras, continue in their original idolatry. Central America was discovered by Columbus in 1502. In 1527 it was made a Spanish Captain-generalcy, and remained attached to the Crown of Spain till 1821, when Guatemala first declared its independence. The other states speedily followed its example, and, after a severe struggle, succeeded in casting off the yoke of the mother country in 1823. Subsequently they formed themselves into a confederation under the title of the "United States of Central America," which was dissolved in 1839; and they now exist in the form of five sovereign and independent republics. Ever since their independence there have been much anarchy and bloodshed among them, greatly aggravated by filibusters from the United States. Each state has its own president, vice-president, senate, and assembly of deputies, who are chosen by electoral colleges; while the Spanish laws have been replaced by codes modelled on those of the United States. Guatemala, which has a million of inhabitants, is by far the most populous and flourishing state, and has enjoyed a greater share of tranquillity than any of its neighbours.

Industry and Commerce.—The inhabitants are chiefly engaged in agricultural pursuits, in felling timber, and in the transfer of produce to the seaboard. Mining employs only a limited number of the population. The people of Costa Rica grow great quantities of coffee, while those of Guatemala are largely engaged in manufactures and in the production of artificial flowers and embroidered work. The principal exports consist of silver and other metallic ores, mahogany and other valuable woods, dye-woods, indigo, cochineal, hides (chiefly from Nicaragua), sarsaparilla, balsam, tobacco, cigars, cacao, rice, coffee, and sugar. In 1868, the total exports of the five republics amounted to £1,665,142, and the imports to £1,481,885. The principal imports are British and North American manufactures, together with silks, wines, and gloves from France, and linens and glass from Germany. The total revenue for 1869 amounted to £1,087,633, the expenditure to rather more, and the public debt to £1,631,350.

Belize or **British Honduras** lies E. of the peninsula of Yucatan and N.E. of Guatemala, and extends along the Caribbean Sea from the Rio Hondo on the N. to the Rio Sarstoon on the S. Along the coast it is low and swampy; forests of mahogany and cedar occupy the interior; and the soil in the valleys is moderately fertile. The climate is moist but not unhealthy, the heat, though great, being moderated by sea-breezes. The colony is well adapted for raising sugar, coffee, cotton, tobacco, and indigo. The fauna embraces ounces, panthers, tapirs, deer, peccaries, agoutis, armadillos, and monkeys. Birds, fish, and turtle are abundant; manatis and alligators frequent the lagoons. The population, numbering about 25,630, is composed chiefly of negroes, who were first brought to the country as slaves. The white inhabitants are exclusively occupied in agriculture and commerce; the negro, in cutting mahogany and dye-woods for exportation, and in fishing. The value of the exports to Great Britain in 1869 amounted to £189,210, and the imports from Great Britain to £133,983. Till recently the colony formed a dependency of Jamaica, but the government is now vested in a lieutenant-governor, an executive council, and a legislative assembly. It was discovered by Columbus in 1502. Its possession was long disputed by the Spaniards, but it was finally yielded to Britain in 1783.

WEST INDIES AND BERMUDAS.

Position and Boundaries.—The Antilles, or West Indies, consist of a huge archipelago of nearly one thousand islands, extending in a curvilinear line between the peninsula of Florida, in the United States, and the delta of the Orinoco, in South America; and separating the Atlantic Ocean on its N. and E. from the Caribbean Sea and G. of Mexico on its S. and W. Lat. 10° to 27° N.; lon. 59° to 85° W. They are called *Antilles* from their position being opposite to the American continent, and *West Indies* from Columbus, their discoverer, imagining that they formed the nearest portion of India, a westerly passage to which he was in quest of.

The entire Archipelago is physically divided into four distinct groups —viz., 1. The Bahama or Lucayo Islands, about 500 in number, S.E. of Florida, the larger islands being Great Bahama, Abaco, Eleuthera, New Providence, Andros, San Salvador, Long Island, Acklin, Marignano, and Great Inagua. 2. The Greater Antilles, between the Bahamas and Central America, and comprising Cuba, Jamaica, Haiti or San Domingo, and Porto Rico. 3. The Lesser Antilles or Windward Islands, extending in a semicircular line from Porto Rico to the mouth of the Orinoco, and including the Virgin Isles, Guadeloupe, Desirade, Mariegalante, Dominica, Martinique, S. Lucia, S. Vincent, Barbadoes, Grenada, Tobago, and Trinidad. 4. The Leeward Islands, off the coast of Venezuela, and consisting chiefly of Margarita, Tortuga, Buen Ayre, and Curaçoa.

Area, Population, and Political Relations. — The area amounts to 93,650 sq. m. (without including the Bermudas), or considerably more than the area of Great Britain; while the population at last census amounted to 4,202,400, or one-sixth the population of Britain. With the exception of Haiti, which now consists of two independent states (Haiti in the W., and Dominica in the E.), and some of the Leeward group which belong to Venezuela, all the West Indian Islands are in the possession of European nations. About one-half of the whole area, including the large island of Cuba, belongs to Spain. Great Britain has the next largest share, after which rank France, the Netherlands, Denmark, and Sweden.

TABLE OF WEST INDIA ISLANDS.

Islands.	Government.	Area in English sq. m.	Pop. at last Census
Haiti, San Domingo, or Hispaniola,	Haiti and Dominica.	28,031	706,500
Cuba, Porto Rico, Isle of Pines, and two of the Virgin Isles,	Spain.	49,478	2,025,000
The Bahamas, Jamaica, and most of the Windward Islands—(Trinidad, Tobago, Barbadoes, Grenada, St Vincent, St Lucia, Dominica, Montserrat, Antigua, St Christopher, Barbuda, Anguilla, and most of the Virgin Isles, ...	Britain.	15,051	1,064,500
Guadeloupe, Desirade, Martinique, Marie Galante, Les Saintes, north part of St Martin—all in the Windward group,	France.	1,005	327,495
Curaçoa, Buen Ayre, Oruba, Los Roques (Leeward Islands), St Eustatius, Saba, and south part of St Martin (Windward Islands), ...	Netherlands.	368	86,161
St John's, St Thomas, Santa Cruz (Virgin Isles), ...	Denmark.	119	37,821
St Bartholomew (Windward Isles),	Sweden.	16	2,595
	Total, . .	93,650	4,202,400

The following are the principal cities and towns of the Archipelago:—

INDEPENDENT.—Port-au-Prince 31, Cape Haitien 10 (in Haiti), San Domingo 15, Santiago 12 (in Dominica).

SPANISH.—Havana 200, Santiago 37, Mantanzas 36, Porto Principe 30, Holguin 8, Bayamo 7, Trinidad 13, S. Espiritu 11 (in Cuba), San Juan 15 (in Porto Rico).

BRITISH.—Nassau, cap. of Bahamas, 7 (New Providence), Spanish Town 6, Kingston 32, Port-Royal 15 (Jamaica), Port España 12 (Trinidad), Scarborough 3 (Tobago), Bridge Town 22 (Barbadoes), St George 4 (Grenada), Kingston 5 (S. Vincent), Castries 2 (S. Lucia),

Roseau 5 (Dominica), Plymouth (Montserrat), St John 14 (Antigua), Basse-Terre 7 (St Christopher), Road Town (Tortola).

FRENCH.—Basse-Terre 5, Point-à-Pitre 20 (Guadeloupe), Fort Royal 12, St Pierre 23 (Martinique).

DUTCH.—Williamstadt or Curaçoa 7 (Curaçoa).

DANISH.—Christianstadt 10 (Santa Cruz), St Thomas (St Thomas).

SWEDISH.—Gustavia 10 (St Bartholomew).

Descriptive Notes.—**Port-au-Prince**, formerly cap. of the island San Domingo, and now of the Haitian republic, is a place of some commercial importance, situated on the W. coast. **San Domingo**, cap. of the republic Dominica, was the first permanent settlement made by Europeans in America, having been founded in 1502, and is now the oldest existing city in the New World. The bones of Columbus remained in the cathedral of San Domingo till 1795, when they were removed to Havana. **Havana**, cap. of the island Cuba, on its northern coast, is the largest city in the West Indies, and one of the greatest commercial marts of the western world. About one-half of the inhabitants are whites, the remainder being slaves and free coloured negroes: its principal article of manufacture is cigars, which have long obtained an almost universal celebrity. **Santiago**, a fortified town on the S.E. coast, is the oldest town in Cuba, of which it was formerly the cap., and is still, next to Havana, the most commercial in the island. **Porto Principe**, in the interior, is a poor, ill-built, but large town. **San Juan**, cap. of the island Porto Rico, is strongly fortified, has an excellent harbour, and is a large, well-built town. **Nassau**, in New Providence, the cap. of the Bahama Islands, is a neat, well-built town, with spacious streets, handsome houses, and a considerable trade: the principal exports are cotton, pimento, and salt. **Spanish Town**, cap. of Jamaica, is a small, ill-built, and unhealthy town. **Kingston**, the chief commercial city in Jamaica, stands on a fine harbour on the S.E. coast: it is well built, has extensive trade, and steam communication with England and several West Indian ports. **Port España**, cap. of Trinidad, is a handsome town on the W. coast, with a spacious harbour and considerable trade. **Bridge Town**, cap. of Barbadoes, England's first colony, is a large, gay, and handsome town, and one of the strongest military posts in the West Indies. **St John**, cap. of Antigua, is the seat of government of the Leeward Islands. **Basse-Terre**, with a harbour defended by several batteries, is the cap. of the British island St Christopher or St Kitt's. **Basse-Terre**, cap. of the French island Guadeloupe, is the residence of the governor, and has several schools and a botanic garden. **St Pierre**, the largest and most commercial town of the French West Indies, was the birthplace of Josephine, first queen of Napoleon I. **Williamstadt**, the centre of commerce for the Dutch West Indies. **Christianstadt**, the seat of the governor-general of the Danish West Indies, has an excellent harbour defended by a fort and battery, and is the chief entrepôt of commerce with Copenhagen. **Gustavia**, cap. of island St Bartholomew, the only colony of Sweden in America, exports some cotton and salt.

Surface and Mountains.—The different islands exhibit great diversity of aspect—some being tame and low, others bold and mountainous.

The Bahamas, consisting of a vast number of small, low, flat islands, are composed of banks of sand or coral, and surrounded by reefs, rocks, and

shoals. The Great Antilles consist of one immense mountain-chain, extending, with certain interruptions now occupied by arms of the sea, from Cape St Antonio in Cuba, to the eastern extremity of Porto Rico, and thence prolonged through the Lesser Antilles to the N.E. coast of South America. It attains its maximum elevation in the E. end of Cuba, where the Sierra del Cobre reach to the height of 7200 ft. Haiti is traversed by parallel mountain-chains, Mount Chaco being 8900 ft. high. The Blue Mountains, in Jamaica, vary from 5000 to 7150 ft.; in Porto Rico the height does not exceed 4000 ft.; while many of the Lesser Antilles rise to elevations of between 4000 and 5000 ft. The majority of the islands are of volcanic origin, but many are of coralline formation. Volcanic action is now confined to the Windward Isles, from Grenada to St Eustatius, La Souffrière in St Vincent being an active volcano, from which considerable eruptions have occurred in modern times; while many others have vomited ashes and lava within the historical period. St Domingo and Jamaica have repeatedly been the scenes of some of the most tremendous earthquakes on record; while the earthquake of Guadeloupe, which occurred in 1843, destroyed the town Point-à-Pitre, when 6000 people perished.

Climate.—With the exception of the northern Bahamas, which lie beyond the tropic of Cancer, the entire West Indian Archipelago is situated in the torrid zone. The heat is consequently very great on the lower grounds, where, however, it is tempered by the sea-breezes, which generally blow in the afternoon, when their cooling agency is most needed. In the elevated regions of the larger islands the temperature is usually cool and delightfully pleasant.

Snow is never known to fall, but slight frosts occasionally occur in the mountainous districts of Cuba. The annual mean temperature at Havana is 77°.9 Fah.; mean winter, 73°; mean summer, 82°.4. When the sun is in the southern hemisphere, the Archipelago enjoys the benefit of the trade-winds, blowing from N.E. and E.N.E., and diffusing over it a refreshing coolness; but when the sun has passed the equator, the trade-winds retire northward and are replaced by south-eastern winds, which are warm and gentle. The year is divided into two seasons—the dry and wet. All the islands south of the 18th parallel have two dry and two wet seasons, and this is also the case with the southern shores of Jamaica, Haiti, and Porto Rico. The long dry season sets in about the end of November, and continues till the beginning of March, during which time the sky is cloudless for several weeks and even months in succession. The long rainy season commences in July, and continues till the month of November, when the rain falls in torrents, but rarely lasts for many hours continuously. It is ushered in by violent gusts of wind, accompanied by terrific thunderstorms, and during their continuance the destructive yellow fever and other diseases are prevalent. On some of the islands the annual rainfall is enormous; thus at Guadeloupe it is said to amount to 192 in.; Cuba, 142; Haiti, 107; Barbadoes, 72; and Jamaica, 50; while the average rainfall over the Archipelago is 60 in.

Natural Products.—The copper mines of Cuba form an invaluable source of revenue to the Spanish crown, and mines of excellent coal have been discovered. Gold, silver, copper, tin, iron, and rock-salt are found in San Domingo, but the mines are now unproductive. In Jamaica no metal is known to exist, except lead and copper, both of

which are now being mined with advantage. Porto Rico contains some gold, copper, iron, lead, and coal, but no mines have been wrought until very recently. The mineral products of the smaller islands are unimportant. Salt is plentiful in the Bahama Islands, and asphalt in Trinidad.

The flora is intermediate between that of South and Central America, from both of which, however, it is distinguished by its great quantity of ferns and orchidaceous plants. Among the principal articles which the Archipelago supplies to the commerce of the world are coffee and sugar (both of which were introduced by Europeans), rum, molasses, cotton, tobacco, cigars, arrowroot, and Jamaica pepper. Other articles of less importance are indigo, ginger, cochineal, logwood, and various other medicinal plants and dye-woods; together with mahogany, lignum-vitæ, and other trees whose woods are susceptible of the finest polish. The fruits are numerous and highly luxuriant, comprising the pine-apple, cocoa-nut, pomegranate, mango, guava, orange, bread-fruit, and banana. Maize, or Indian-corn, is extensively grown throughout the Archipelago, forming the main staple of food. The wild quadrupeds which existed in the Archipelago when the Spaniards first arrived were the agouti, peccary, racoon, Indian dog, and wild-boar. These are now all extinct, with the exception of the wild-hog and monkey, which are still found on several islands.

Ethnography.—At the time of their discovery, the southern islands were inhabited by the fierce and warlike Caribs; the more northern by a gentler race, the Arrowauks. Both these nations have long been extinct, with the exception of a few families of Caribs in the islands of St Vincent and Trinidad.

The indiscriminate and wholesale butchery of the natives will ever remain an indelible stigma on the Spanish name. The first settlement of the Spaniards in Cuba took place in 1511; and in less than half a century afterwards, the aborigines, who are supposed to have amounted to at least 1,500,000 persons, had become extinct. The inhabitants of Haiti, estimated at 1,000,000, were in like manner reduced, in the first fifteen years after the arrival of the Spaniards, to 60,000, and in nine years more to 10,000. The present population, amounting to nearly four millions, consists of three classes—whites, negroes, and mulattoes. In Cuba and Porto Rico the negroes constitute about one-half of the entire population, in the British islands about three-fourths, and in the others about two-thirds. The descendants of white parents born in the West Indies are termed Creoles, those of mixed parentage, Mulattoes. The negroes were introduced as slaves from Africa, but slavery is now abolished in all the islands except those belonging to Spain, which now enjoys the unenviable distinction of being the only civilised country in the Old World which directly and avowedly carries on the slave trade in all its horrors. The number of slaves in the Spanish W. Indies is about 700,000. Slavery was abolished in the colonial possessions of Great Britain in 1834, when the British Parliament voted for the liberation of the negroes no less a sum than twenty million pounds sterling—a sum unparalleled for such a purpose in the annals of our race. The slaves in the Dutch colonies were liberated in 1863.

Language and Religion.—The languages principally spoken in the West Indies are Spanish, French, and English—Spanish in Cuba and

Porto Rico, French in Haiti and most of the French possessions, English in Jamaica and the other islands belonging to Britain, except in Trinidad and St Lucia, where French is spoken. The Roman Catholic is the most prevalent religion, but Episcopacy is established in the British colonies. The negroes and mixed races in the several islands generally speak the language and profess the religion of the white race dominant in each. In Trinidad, however, there exists a Mohammedan negro community, the only one in connection with the western world.

Education and Government.—Education is at a very low ebb in the West Indies, not excepting the British possessions, most of the opulent persons in which send their children to be educated in the mother country. Codrington College, in Barbadoes, is a thriving institution, and the most important educational establishment in the Archipelago. Haïti was formerly held partly by France and partly by Spain; but about the beginning of the present century an insurrection of the black population took place, which resulted in their complete independence. There are now two native governments, both republican: one named Dominica, consisting of the Spanish part of the island; and the other Haiti, of the French part. Cuba and Porto Rico are each governed by a Captain-General appointed by the Spanish Crown. The government of the French possessions is conducted by a Governor and Colonial Council of French residents; that of the Dutch is vested in a Stadtholder, assisted by a Civil and Military Council. The government of Jamaica is vested in a Governor and a Council of 8 members, half of whom are nominated by the Crown, and a Legislative Assembly. The Bahamas, Bermudas, and each of the other British islands, have a representative government constituted after the model of that of Jamaica.

Industry and Commerce.—The cultivation of the soil is entirely performed by the negro population, who alone are capable of enduring the intense heat of the lower grounds. The amount of sugar and other articles of export from the British West Indies is greatly less than it was prior to the emancipation of the blacks, and very many of the planters, formerly employing slave labour, have been ruined. The principal causes that have led to this disastrous result are the unwillingness of the free negroes to engage actively in agricultural labour, and the low price of sugar, arising from the unequal competition of the slaveholding planters of Cuba and Porto Rico. The Exports from the British islands to the home country consist chiefly of sugar, cotton, spirits, cacao, coffee, logwood, pimento, guano, ginger, sponge, and arrowroot; while the Imports from Great Britain comprise apparel, arms, leather, iron, cotton, woollen, and linen cloth, drugs, soap, candles, hardware, rice, beer, and wine. Total Exports to Great Britain, in 1874, amounted to £4,342,000, and the Imports from Britain to £2,465,000. The Spanish islands in the same year exported to the United Kingdom goods to the value of £5,109,000, the principal articles being unrefined sugar, tobacco, and cigars; while we, in turn, exported to them £2,752,000 worth.

The BERMUDAS or SOMERS ISLANDS, 580 m. E. of South Carolina, and about 900 m. N.E. of the Bahamas, consist of a group of about 300 small islets and rocks belonging to Britain, lat. 32° 20′ N.; lon. 64° 50′ W. The largest, named Long Island, is only 180 ft. above the sea, while most of the others are

scarcely raised above the water. Area, about 24 sq. m.; pop. in 1871, 12,121. Revenue, £33,000; Expenditure, £32,000.

They are of coralline formation, contain neither springs nor streams; but the soil is fertile, climate mild and salubrious, and the fruits of both tropical and temperate regions are raised in great abundance. The culture of the orange is extending, and the arrowroot is considered of excellent quality. More than half of the inhabitants are blacks and people of mixed colour. Hamilton, the cap., situated on Long Island, and St George, on an island of the same name, are the only towns in the group. The Bermudas are chiefly serviceable as a naval station and penal settlement. On the island Ireland, which is strongly fortified, and one of the most important naval stations in the British colonies, an extensive dock-yard has been constructed calculated to be of great importance to Britain in the event of a war with the United States. They were discovered by Juan Bermudez, a Spanish navigator, in 1522; the first settlement was made on them in 1609, since which they have remained in the possession of England.

SOUTH AMERICA.

1. **Boundaries.**—N., the Caribbean Sea; W., Central America and the Pacific Ocean; S., the Antarctic Ocean; E. and N.E., the Atlantic. Lat. 12° 28′ N.—55° 55′ S.; lon. 35° 20′—83° W.

It thus embraces 68½° of lat., and nearly 48° of lon. Point Gallinas, its northern extremity, is on the same parallel with Capes Roxo and Guardafui in Africa, the cities Aden, Madras, and Bangkok in Asia, and Leon in Central America; while its central point (lat. 22° S., lon. 58° W.) is in the same latitude with Lake Ngami in S. Africa, N.W. Cape in Australia, and Tarija in Bolivia. It forms the southern continent of the New World, as Africa does of the Old, and is connected with the northern continent by the Isthmus of Panamá and the Archipelago of the Antilles. The shape approximates to a right-angled triangle, with the right angle situated near Parahyba in Brazil. The extreme length is about 4800 m., and the maximum breadth about 3000 m. The coast-line is estimated at upwards of 12,000 m., being only one-half of that of N. America; but this deficiency of seaboard is in a great measure compensated for by the great number of large rivers, which are in general navigable nearly to their sources.

2. **Area and Population.**—The aggregate area of the different states, as exhibited in the following table, is 7,028,206 sq. m., and the aggregate population, 25,099,512. South America is the fourth continent of the globe in point of size, and the fifth as regards population. The area is double that of Europe, while the population is not nearly equal to that of the British Isles. This continent is distinguished from all the others by its gorgeous vegetation, a result caused by its tropical heat and abundant irrigation, and by the prodigious variety of its lower forms of animal life.

3. **Political Divisions.**—The continent embraces 33 different

states; but if we regard the Granadian and Argentine Confederations as forming one state each, the number will be reduced to 14. With the exception of Brazil and Guiana, all the states of S. America have adopted the republican form of government; and it is a remarkable fact, that while all the colonial possessions of Portugal contained in this continent have been kept entire in the form of an empire, enjoying the blessings of a stable government, those of Spain have fallen asunder into numerous republics, which are in a state of chronic disaffection.

TABLE OF SOUTH AMERICAN STATES.

NAME.	Area in Eng. Square Miles.	Population at last Census.	CAPITAL.	River, &c., on which the Capital stands.
U. S. of Colombia	514,325	2,900,000	Bogotá	San Francisco.
Venezuela	426,712	1,784,194	Caracas	n. N. Coast.
Ecuador	219,000	1,308,082	Quito	Esmeraldas.
British Guiána	99,925	215,200	Georgetown	Demarara.
Dutch Guiana	62,850	69,834	Paramaribo	Surinam.
French Guiana	35,080	25,137	Cayenne	I. Cayenne.
Brazil	3,231,000	9,706,187	Rio de Janeiro	E. Coast.
Perú	510,091	2,500,000	Lima	W. Coast.
Bolivia	374,480	1,987,352	Chuquisaca	Pilcomayo.
Chilé	116,043	2,068,447	Santiago	Mapocho.
Argentine Conf.	896,900	1,840,000	B. Ayres	Rio de la Plata.
Paraguay	75,000	221,079	Asuncion	Paraguay.
Uruguay	66,800	450,000	Monte Video	Rio de la Plata.
Patagonia	400,000?	30,000	Punta Arenas	Str. of Magellan.
Total	7,028,206	25,099,512		

4. **Surface.**—The Andes, a vast mountain-chain, with its plateaux and declivities, stretch along the western coast from the Isthmus of Panamá to Cape Horn, dividing the continent into two unequal slopes, and covering nearly a sixth part of the entire area.

The remainder of the surface consists, for the most part, of three immense plains, watered respectively by the Orinoco, Marañon, and Paraná. The first of these, named the *Llanos*, is bounded on the N. by the eastern chain of the Columbian Andes, and on the S. by the Parimé and Pacaraima Mountains, which separate it from the basin of the Amazon. It is one of the most level portions of the earth's surface, having, at a distance of 450 m. from the ocean, an elevation of only 192 ft. The basins of the Marañon and Paraná, lying south of it, are enclosed between the Andes on the west and the Brazilian mountains on the east. The former of these is the largest river-basin in the world, having an area of a million and a half sq. m. It is separated from the Orinoco by a watershed so low that the Rio Negro, one of its principal tributaries, sends off a branch, named the Casiquiari, to meet the Orinoco—the two basins thus merging into one another; while the Madeira, another of its tributaries, rises only a few miles distant from the head-waters of the Paraguay, which finds its way southward to the Paraná, both affluents being navi-

gable to their sources. These three vast river-basins are thus virtually interlocked, and a mighty circle of inland navigation, which is without a parallel in any other part of the globe, is established by natural means.

5. **Isthmus, Peninsulas, and Capes.**—Isthmus of Panamá, uniting Southern with Central America; Peninsula of Paraguana, N.W. of Venezuela; Peninsulas of Tres Montes and St Josef, on the W. and E. sides of Patagonia; Cape St Francisco, W. of Ecuador; Blanco and Aguja Point, N.W. of Peru; Froward, the most S. point of the American continent; Horn, the southernmost extremity of the New World, S. of Tierra del Fuego; Corrientes and St Antonio, E. of Buenos Ayres; Sta Maria, E. of Uruguay; Frio, St Thomé, and St Roque, E. of Brazil; Branco, the most easterly point of America; Do Norte, N. of Brazil; Point Gallinas, N.E. of New Granada, the northernmost point of South America.

6. **Islands.**—The Galapagos, W. of Ecuador; Chincha Islands, W. of Peru; Juan Fernandez, W. of Chilé; Chiloe, Wellington, and Madre de Dios Archipelago, W. of Patagonia; Tierra del Fuego, S. of Patagonia; Falkland Isles and South Georgia, S.E. of Patagonia; Margarita, Tortuga, Buen Ayre, and Curaçoa, N. of Venezuela.

The **Galapagos**—so called by the Spaniards because they abound in *tortoises*—are a group of islands situated under the equator, 750 m. W. of Ecuador. They are thirteen in number, are all volcanic, generally sterile, and uninhabited. The flora and fauna are to a large extent peculiar, especially the birds and reptiles. The **Chincha Islands**, with their rich deposits of excellent guano, constitute a mine of wealth to the Peruvian Government. **Juan Fernandez** is famous as having been the residence of Alexander Selkirk, whose adventures suggested the well-known tale of 'Robinson Crusoe.' **Tierra del Fuego** ("land of fire"), so named from the volcanoes with which it abounds, consists of a cluster of islands off the S. coast of Patagonia, from which it is separated by the Strait of Magellan. Some of the islands are level and pretty well wooded, producing birches and evergreens. The inhabitants, who subsist by fishing and hunting, are among the lowest in the scale of humanity. **Falkland Isles**, a group of about two hundred small islands, belonging to Great Britain, in the South Atlantic Ocean, about 300 m. N.E. of Tierra del Fuego; area, 4741 sq. m.; pop. 662, consisting chiefly of British colonists from Buenos Ayres. Vessels passing round Cape Horn, and whaling-ships frequenting the South Seas, are here supplied with provisions and fresh water. **South Georgia**, about 1000 m. E. of Tierra del Fuego, is a bleak and barren region traversed by lofty mountains which are constantly covered with snow—the heat of summer being sufficient only to melt the snow on the low grounds of the N.E. side. The neighbouring seas abound with seals, and sea-fowl in great numbers frequent the coasts.

7. **Bays, Gulfs, and Straits.**—Bay of Panamá and Gulf of Guayaquil, W. of Colombia; Strait of Magellan, between Patagonia and Tierra del Fuego; Gulfs of St George and San Matias, E. of Patagonia; Estuary of Rio de la Plata, between Buenos Ayres and Uruguay; All Saints' Bay, E. of Brazil; Rio Pará and Estuary of the

Amazon, N.E. of Brazil; Gulfs of Venezuela and Darien, N. of Colombia.

8. **Mountain-Systems.**—This continent is traversed in the direction of its greatest length by the Andes (Span., *Cordillera de los Andes*), in some respects the most magnificent chain of mountains on the earth's surface.

Commencing at the Isthmus of Panamá and the Caribbean Sea, it extends along the Pacific coast of the continent to its southern extremity, being a total length of about 4500 m., with a breadth varying from 40 to 400 m. Though greatly inferior in elevation to the Himalaya, it far surpasses the latter in length and in the extent of surface which it occupies. In some places the chain forms only one ridge, as between Cape Horn and the 20th degree of S. latitude, while in others there are two or more parallel ridges, supporting between them highly-elevated table-lands. In general they present a very steep slope towards the Pacific coast, to which they maintain a parallel direction at an average distance of from 20 to 160 m. No other chain on the earth's surface can vie with the Andes in the number and grandeur of its volcanoes. The number of active craters is reckoned at 24, and of dormant ones, 32. Proceeding from N. to S. the following are the loftiest summits—those distinguished by an asterisk being active volcanoes:—1. THE ANDES OF QUITO, extending in three parallel ranges from the Caribbean Sea to the 5th degree of S. latitude. They embrace the table-land of Quito, 9600 ft. in elevation, and flanked by some of the most majestic volcanoes in existence. *Tolima, in central chain, lat. 5° N., 18,020 ft.; *Pichincha, on the equator, 15,936 ft.; *Antisana, S.E. of Quito, 19,137 ft.; *Cotopaxi, S.S.E. of Quito, 18,875 ft.; Chimborazo, 21,424 ft. Height of snow-line, 15,800 ft. 2. ANDES OF PERU, extending in three parallel ranges from lat. 5° to 14° S.—the western range being the loftiest: Knot of Huanuco, 11,800 ft.; Nevada de Sasaguanca, N.E. of Lima, 17,904 ft. 3. ANDES OF BOLIVIA, forming the central and most elevated portion of the system, extend in two gigantic longitudinal ridges from lat. 14° to 21° S.: Sorata or Ancohuma (lat. 15° 30′ S.), 24,812 ft. high, the loftiest summit of the Andes and of the New World; Chuquibamba, 15 m. N.W. Arequipa, 21,000 ft.; Illimani, 21,150 ft.; Cochabamba, 17,073 ft.; Cerro de Potosi, 16,152 ft. Height of snow-line, 18,000 ft. 4. ANDES OF CHILE, extending in one mighty ridge from lat. 21° to 42° S., though of inferior average elevation to the Andes of Bolivia, contain Aconcagua, 23,910 ft., till very recently regarded as the culminating point of the entire chain; *Volcano of Chillan, 16,000 ft. Height of snow-line in the S., 8600 ft. For the other mountain-ranges of South America, see under "Colombia," "Guiana," and "Brazil."

9. **River-Basins and Capitals.**—With exception of the Desaguadero, which flows from Lake Titicaca, in the Basin of Continental Streams, all the rivers of South America belong to one or other of three oceanic basins—those of the Pacific, Atlantic, and Caribbean Sea. The rivers flowing into the Pacific are mere mountain torrents; the Magdalena is the only one of importance that finds its way to the Caribbean Sea; but those inclining to the Atlantic comprise the most gigantic rivers on the earth's surface. Of these, by far the largest is the Amazon or Maranon, whose direct length is 2100 m., and including its windings, nearly 4000 m. It is navigable for

large vessels from its mouth to the influx of the Ucayali, and for small craft to the very foot of the mountains, while twenty great rivers, all navigable to their sources, discharge their contents into its stream—thus affording an immense inland navigation of about 50,000 m., and draining an area variously estimated from 1,500,000 to 2,000,000 sq. m.

River-Basin.	Length of Basin in Eng. Miles	Area in Geographical Sq. M.	Capitals of States and Provinces.
Magdalena,.....	700	72,000	Bogota' (U. States of Colombia), Medellin, Tunja (Boyaca), Popayan (Cauca), Socorro (Santander).
Orinoco,.....	1000	252,000	Angostura, Varinas (Orinoco).
Essequibo,....	400	61,650	George Town (British Guiana).
Amazon,.....	2100	1,512,000	Manaos or Barra (Rio Negro), La Paz, Exaltacion (Beni), Santa Cruz, Cochabamba.
Tocantins,.....	1260	294,480	Pará, Goyaz.
Paranahyba,...	650	115,200	Oeiras (Piauhi).
S. Francisco, ..	900	187,200	Macayo (Alagoas), Sergipe, Ouro-Preto (Minas Geraes).
Paraná,.....	1600	886,400	Monte Video (Uruguay), Buenos Ayres, Parana' (Entre Rios), Santa Fé', Corrientes, Asuncion (Paraguay), San Luis, Cordova, Santiago, Tucuman, Catamarca, Salta, Jujuy, Chuquisaca (Bolivia), Tarija, Potosi, Cuyaba (Matto Grosso).

10. **Lakes.**—There are very few permanent lakes of any magnitude in South America, and those which exist are in general unconnected with the larger river-basins.

On the table-land of Bolivia, at an elevation of 12,847 ft., is Lake **Titicaca**, next to Sir-i-Kol, in Bokhára, the highest lake in the world, with an area of nearly 4000 sq. m. It is drained by the Desaguadero, which carries its surplus waters to Lake **Uros**, a smaller sheet of salt water about 200 m. to the S.E. Lake **Maracaybo**, in the N.W. of Venezuela, has an area of about 5000 sq. m., and is connected with the sea by a narrow channel 12 m. long. Lake **Dos Patos**, in the S.E. of Brazil, 5000 sq. m., discharges its waters into the Atlantic by a channel named Rio Grande do Sul. There are numerous lakes in La Plata, between the Andes and the river Paraná, the chief of which are **Guanacache** and **Silverio**.

11. **Climate.**—With two-thirds of its area situated between the tropics, the climate of South America is necessarily very hot. Though yielding in this respect to Africa, the corresponding continent of the Old World, the temperature is considerably higher than that of North America; for while the latter has its maximum breadth in the arctic regions, South America attains its greatest width in the torrid zone.

In contradistinction to the other great divisions of the land, the western shores of this continent are considerably colder than the eastern,

owing to the low temperature of the Antarctic Drift Current, which, setting out from the Antarctic Ocean, flows north-eastward against the shores of Chilé, then northward along the coast to the vicinity of the equator. The highest mean annual temperature occurs in the northern parts of Guiana and Venezuela, where it amounts to 81° Fah. South America is also characterised by great moisture, which attains its maximum in the extreme north, where the temperature is highest, but which is everywhere more copious on the eastern than on the western side of the Andes. Within the tropics the wide plains on the east are deluged by the heavy periodical rains from November to May, while the narrow margin between the Cordilleras and the Pacific is almost entirely rainless. In some places the deposition of moisture is surprisingly great: on the north coast of Dutch Guiana 229 in. fall annually, and in certain localities on the east coast of Brazil no less than 276 in. have been observed. As the rainy season, however, is confined to a brief period, the number of clear days is much more considerable than in our temperate climates; while during the long-continued drought that precedes it, the ground is parched, the sun glares with intense radiance, and the wild animals, tormented alike by hunger and thirst, perish in great numbers.

12. **Geology.**—The geological structure of South America is still less known than that of the northern continent.

It is understood, however, that Crystalline and Granitoid rocks prevail throughout the entire range of the Andes from Panamá to Cape Horn, as also in Colombia, Guiana, and the whole of central and southern Brazil, from the river Paraguay to the Atlantic, and from the 10th degree of south latitude to the Rio de la Plata; that the Palæozoic and Transition series occupy a large portion of the table-land of Peru and Bolivia, around Lake Titicaca, together with a long narrow belt along the eastern flank of the Andes, from the source of the Pilcomaya to the northern frontier of Patagonia, as also a broader tract in the upper basin of the San Francisco; that the Secondary formations are very moderately developed, being confined chiefly to small areas in the central basin of the Orinoco, and along its affluent, the Apuré, to similar patches on both sides of Lake Maracaybo, with a still smaller one in Peru, north of Lima; that Tertiary strata extend in a broad continuous belt lying between the eastern flank of the Andes and the western frontier of Brazil, and from the 5th parallel of north latitude to the 50th degree of south latitude; and that alluvium and modern detritus cover the territory of Buenos Ayres, together with a large portion of the basin of the Amazon.

13. **Minerals.**—South America has, ever since its discovery, been celebrated for its mineral wealth, and more especially for the abundance of its precious metals.

It was this that excited the cupidity of the Spaniards, and that led to the conquest of Peru in the earlier part of the sixteenth century. Ever since that period till the recent discoveries of gold in California and Australia, a great part of the precious metals used in the world have been brought from America; and, with the exception of the Mexican mines, almost all from the southern continent. The chain of the Andes is richly metalliferous, more especially in the countries of Peru, Bolivia, and Chilé; while Brazil, on the opposite side of the continent, yields to few countries on the globe in regard to the variety and richness of its metals and precious stones. *Gold* is found in New Granada, Peru, Bolivia, Ecuador,

Chilé, La Plata. *Silver*, in Peru, Bolivia, New Granada, Chilé, and La Plata. *Tin*, in Peru, Chilé, and Brazil. *Lead*, in Ecuador and Brazil. *Copper*, in Chilé, Peru, and Brazil. *Mercury*, in Peru, Ecuador, and Brazil. *Iron*, in New Granada, Bolivia, Chilé, La Plata, and very abundantly in Brazil. *Antimony*, in Brazil. *Coal*, in Chilé, Brazil, and New Granada. *Sulphur*, in Brazil, Peru, and Ecuador. *Salt*, in La Plata, Brazil, Peru, and Bolivia. *Diamonds* are very abundant in Brazil, especially in the province Minas Geraes; and *other precious stones* in Brazil, Chilé, Peru, New Granada, and Guiana.

14. **Botany.**—South America is distinguished from the other continents of the globe by its pre-eminently varied and luxuriant vegetation, caused by its tropical heat and abundant moisture, as also by the great number of plants of commercial value indigenous to it, as the cassava or mandioc, from which we obtain tapioca; the cinchona, which yields Peruvian bark; the caoutchouc or india-rubber plant; the *maté* or Paraguay tea plant; the cacao or chocolate plant, which is also a native of Central America; and the coco-leaf plant, a narcotic used by the native Indians of Bolivia and Peru. The continent embraces no fewer than six of the twenty-five botanical regions of modern botanists—viz., the 15th, 17th, 18th, 20th, 21st, and 22d (see p. 55).

The first of these is the "Mexican region," comprising Mexico, Central America, Colombia, Guiana, and Peru, and extending to the altitude of 5000 ft. The natural orders Cactaceæ and Piperaceæ are specially abundant; but other tropical orders are less frequent than in corresponding latitudes of the Old World. Among the numerous cultivated plants of this region may be mentioned maize, Guinea-corn, cassava, yams, batatas, arrowroot, plantain, mango, custard-apples, guava, papaw, pine-apple, cashew, tamarind, vine, Indian fig, chocolate, vanilla, capsicum, sugar, coffee, cotton, and tobacco. The next region, called "Humboldt's region," or the region of "Medicinal Herbs," embraces the loftier belt of the Andes, between the altitudes of 5000 and 9000 ft. Here the medicinal barks of commerce, especially Peruvian bark, are very abundant; the cultivated plants of the lower grounds almost entirely disappear, with the exception of maize and coffee; but potatoes, European fruits, and cereals supply their place. Above this is the "region of *Escallonieæ* and *Calceolariæ*," embracing the highest elevations of the last-mentioned range, up to 18,000 ft., or the limit of perennial snow. Here tropical forms almost wholly vanish, their place being supplied by the Alpine genera of saxifrages, gentians, mosses, lichens, &c. The fourth, or "Brazilian region," embraces all South America between the Andes and the Atlantic, extending southward to the tropic of Capricorn. This is probably the portion of the globe in which the vegetable kingdom attains its greatest profusion and variety, whether regard be had to the abundance of genera and species, the magnitude of individual forms, the vast extent of the primeval forests, or the numerous climbing and parasitical plants. In place of the few mosses and lichens which cover the trunks and branches of forest-trees in temperate climes, in Brazil they are bearded from the roots to the extremities of the smallest branches with ferns, cactuses, orchids, &c. The cultivated plants are the same as in the Mexican region. The fifth region is named "St Hilaire's region," embracing the portion of South America lying between the tropic of Capricorn and the northern limit of Patagonia. Here the flora approaches in

a remarkable manner to that of Europe, while it differs entirely, except in Chilé, from the floras of the corresponding latitudes of Africa and Australia. The last botanical region is the "Patagonian," or "Antarctic," embracing Patagonia, the Fuegian Archipelago, and the Falkland Isles. The vegetation bears a great resemblance to that of Central Europe, while there is a slight approximation to the floras of Southern Africa and Australia.

15. **Zoology.**—This continent forms, with Mexico, Central America, and the West Indies, one of the six zoological kingdoms of modern naturalists. It embraces two provinces of very unequal dimensions —viz., Tropical America, embracing all the countries situated within the tropics, and Austral America, comprising the remainder of the continent.

Of the 1967 existing Mammals, there are 518 found in this zoological kingdom, and of these no fewer than 491 species are peculiar to it. The QUADRUMANA, 74 in number, are all peculiar, and are distinguished from those of the Old World by having prehensile tails, which serve the purpose of a fifth hand. The CARNIVORA, of which there are about 155 species, are nearly all peculiar, and are mostly of small size and fearful of man; the largest of them are the puma and jaguar, the latter being a very formidable animal; but the whole list of savage quadrupeds, so common in Africa and India, is entirely unknown in this continent. Cats, dogs, otters, and skunks are numerous, as also bears, racoons, coatis, and gluttons; while bats are more numerous than in any other part of the world. The MARSUPIALIA are represented by the single family of opossums, which contains 28 species, 27 of which are found here. Of RODENTIA there are 95 species in Brazil alone. The capybara, the largest of the order, inhabits Brazil, Guiana, and Paraguay: the utia is found in Cuba; the coypu in Chilé; the chinchilla in Chilé and Peru; the biscacha in Buenos Ayres and Paraguay; the lagotis, viscacha, dusky paca, agouti, acoucha, and cavy, in many places. The EDENTATA are represented by the sloth, hairy ant-eater, armadillo, all of which are peculiar to this continent, and by the extinct megatherium and mylodon. The PACHYDERMATA, once so numerous in this continent, as is evidenced by their fossil remains, are now represented by only 4 species—viz., two tapirs and two peccaries. Of the 18 species of RUMINANTS found in this continent, no fewer than 12 are peculiar to it, the most interesting species being the guanaco (which in its tame state is named the llama), the alpaca, the taruga, and the vicuña. When the Spaniards invaded Peru and Chilé they found the llama domesticated and used as a beast of burden; its flesh was eaten, its skin prepared into leather, and its wool spun and woven into cloth. The Ornithology of Tropical America exceeds in splendour that of any other region of the globe, comprising no fewer than 624 species, or one-tenth of all known birds. It is the chosen metropolis of the humming-birds, parrots, toucans, and tanagers. Of rapacious birds the chief is the famous condor of the Andes, one of the most formidable existing species. Huge serpents and other REPTILES abound in the moist and annually inundated plains, the total number in the tropical province being 62. The principal species are the alligator or cayman, boa-constrictor, and rattlesnake, all of which are peculiar to America. The seas, lakes, and rivers abound with FISH of various kinds, which in Brazil and some of the other countries form one of the most important sources of wealth. The varieties of the INSECT tribes are endless—immense centi-

pedes, scorpions, spiders, ants, termites, locusts, mosquitoes, and chigoes, being the torment alike of man and beast. Indeed, the vast variety of its insect life forms one of the distinguishing characteristics of this continent.

16. **Ethnography.** — For the people, antiquities, languages, &c., of South America, see under North America (p. 513).

COLOMBIA.

(U. S. OF COLOMBIA, ECUADOR, AND VENEZUELA.)

Boundaries.—N., the Caribbean Sea; W., Costa Rica and the Pacific Ocean; S., Peru and Brazil; E., British Guiana. Lat. 12° 28′ N.—5° 40′ S.; lon. 60°—83° W.

Colombia was the name formerly given to those countries in the northwest angle of South America which, under the dominion of Spain, formed the Viceroyalty of New Granada, the Captain-generalcy of the Caracas, and the Province of Quito. They continued in connection with Spain till 1821, when they achieved their independence by the battle of Carabobo, and formed themselves into the Republic of Colombia. After a brief history of 10 years this state was dismembered, and constituted into three distinct republics—New Granada, Ecuador, and Venezuela—which maintained their integrity till 1858, when New Granada was broken up into the nine federal republics which now constitute the United States of Colombia. Ecuador, or Equator, was founded in 1831, when the Republic of Colombia was divided into three sections. It was formerly divided into three departments (Guayaquil, Quito, and Assuay), but more recently into 10 provinces. The Republic of Venezuela, consisting of 13 provinces, was established at the same time as Ecuador. Since 1847 it has been the scene of continual intestine dissensions. In 1863 it became a federal republic of seven states, of which five seceded in 1864, and declared themselves independent. We shall adhere, however, to the former arrangement. Bogotá, the cap. of Cundinamarca, and formerly of New Granada, situated near the central parallel, has the same latitude as Cayenne in French Guiana, Capes Palmas and Formosa in the Gulf of Guinea, Magadoxo in Eastern Africa, and Penang in Further India.

Area and Population.—The combined area is estimated at 1,160,037 sq. m., and the aggregate population at 5,992,276. With ten times the area of the British Isles, Colombia contains only one-sixth of their population. For the area and population of the different states, see the table at p. 568.

Political Divisions.—The U. S. of Colombia consists of 9 small states; Ecuador, of 8 departments or 10 provinces; and Venezuela, of 13 provinces, recently subdivided into 21.

UNITED STATES OF COLOMBIA.

PANAMA.—Panamá 18 (G. of Panamá), Aspinwall (Caribbean Sea).

MAGDALENA.—Santa Marta 4 (Caribbean Sea), Mompox 10 (Magdalena).

CUNDINAMARCA.—BOGOTA 50 n., Honda 6 (Magdalena).

CAUCA.—Popayan 16 (Cauca), Pasto 7 (Patia).

BOYACA.—Tunja 7, Socorro 12 n. (Sogamozo, *affl.* Magdalena).

ANTIOQUIA.—Medellin 30 (Cauca), Antioquia 20.

BOLIVAR.—Cartagena 8 (Caribbean Sea).

SANTANDER.—Socorro 20 n. (Sogamozo, *affl.* Magdalena).

TOLIMA.—Guamas 7 (Magdalena).

ECUADOR.

QUITO.—QUITO 76 (Esmeraldas), Riobamba 20 (Pastaza).

GUAYAQUIL.—Guayaquil 22 n., Tumbez (G. of Guayaquil).

ASSUAY.—Cuença 20 (Pauté, *affl.* Amazon), Loja 6 (Tapotillo).

VENEZUELA.

MARACAYBO.—Maracaybo 22 (G. of Venezuela).

CORO.—Coro 8 (G. of Venezuela).

CARABOBO.—Valencia 29 n., San Carlos 10 (Meta).

CARACAS.—CARACAS 50 n., La Guayra 6 (coast).

BARCELONA.—Barcelona 7 (coast).

CUMANA.—Cumaná 9, Cariaco 7 (coast), Maturin 13 n. (G. of Paria).

GUIANA.—Angostura or Ciudad Bolivar 8 (Orinoco).

APURE.—San Fernando 3, Achaguas 2 n. (Apuré, *affl.* Orinoco).

VARINAS.—Varinas 4 n. (Apuré).

MERIDA.—Merida 10 (Chama, *affl.* L. Maracaybo).

TRUXILLO.—Truxillo 4 n. (L. Maracaybo), Guanaré 4 (Guanaré).

BARQUISIMETO.—Barquisimeto 26 (Portuguesa, *affl.* Apuré).

MARGARITA.—Asuncion (Island Margarita).

Descriptive Notes.—**Panama**, on the Pacific coast of the isthmus, and at the southern terminus of the railway to Aspinwall, has an excellent harbour and a rapidly-increasing trade. **Aspinwall**, situated in a marsh, on the island Manzanilla, and at the northern terminus of the railway which spans the isthmus, is very unhealthy. **Santa Marta** has a fine cathedral, and a harbour defended by batteries. **Bogota'**, cap. of the United States of Colombia, is a large and handsome city, with a university and a fine cathedral, and is surrounded by magnificent scenery. **Popayan**, the first city built by Europeans in this region of America, is delightfully situated between two ridges of the Andes, and is a large, handsome city. **Tunja**, at one time cap. of the Indian kingdom of Cundinamarca, situated on the eastern slope of the Andes, is a flourishing place. Near it was fought, in 1819, the battle of Boyaca, in which the Spaniards were routed by Bolivar. **Cartagena**, a strongly-fortified city and seaport, and the chief naval arsenal in the confederation, contains a magnificent cathedral and several other fine public buildings. **Pamplona**, cap. of Santander; near it are mines of gold and silver.

ECUADOR.—**Quito** (*Ké-to*), cap. of the republic of Ecuador, is a large city situated in a ravine on the east side of the volcano of Pichincha, 9543 ft. above the sea. It was nearly destroyed by an earthquake in 1859, when 5000 of the inhabitants lost their lives. Though situated almost under the equator, it enjoys a continual spring, owing to its great elevation and its proximity to lofty mountains crowned with perennial snow. **Guayaquil**, the principal commercial and seaport town of Ecuador, possesses one of the finest harbours on the Pacific. It is defended by three forts, but is extremely unhealthy. **Tumbez**; here the Spaniards, under Pizarro, first landed on the South American coast, in 1526. **Cuenca** is chiefly noted for its university.

VENEZUELA.—**Maracaybo**, a fortified seaport, with a college, and an active trade with the interior. **Coro**, once the cap. of Venezuela, is situated near the G. of Maracaybo. **Valencia** is finely situated, and has an active commerce with Caracas and Puerto Cabello. **Caracas**, cap. of the republic of Venezuela, is noted as the birthplace, in 1780, of General Bolivar, the liberator of Spanish America. It is a large, meanly-built city, and has frequently suffered from earthquakes. **La Guayra**, the seaport of Caracas. **Barcelona**, founded in 1634, exports horses and cattle. **Cumana**, with a magnificent harbour, is the principal seaport of the republic, and is the oldest Spanish settlement on this coast. **Angostura**, the chief place of trade in the valley of the Orinoco. **Merida**, with a richly-adorned cathedral, was, before its destruction by an earthquake in 1812, the largest city in Venezuela, and is again flourishing. **Truxillo**, named after the birthplace of Pizarro, in Spain. **Barquesimeto** is now but a wreck of what it was previous to the great earthquake of 1812.

Surface and Mountains.—The surface of the three states forming Colombia is highly diversified, having, in the west, the three nearly parallel ranges of the Andes (embracing Cotopaxi, Antisana, Pichincha, and Tolima, the most tremendous volcanoes on the earth's surface, with elevations varying from 16,000 to 19,000 ft., and the huge dome-shaped Chimborazo, 21,424 ft.); in the east the greatly lower mountains of Parimé, the highest summit of which, Maravaca, attains an elevation of 10,500 ft.; and in the centre the magnificent *llanos* of the Orinoco, consisting of immense flats, covered with vast forests and savannahs (p. 568).

Climate and Natural Products.—The climate in the lower grounds is characterised by great heat, moisture, and insalubrity; but the elevated table-lands enjoy a perpetual spring. Hence nearly all the towns in this region are situated on the higher grounds. These countries, especially Ecuador and the U. S. of Colombia, are highly distinguished for their mineral and vegetable wealth.

The former has been very imperfectly explored; but from recent researches it appears that valuable gold-fields line the eastern slopes of the Andes, and that lead and quicksilver abound in many places. The latter contains all the important metals, including gold, silver, mercury, copper, iron, tin, lead, and platinum. Coal is found near Bogotá; diamonds, sapphires, emeralds, amber, turquoises, and rock-salt, in several places. The gold mines of Venezuela, which led to the conquest of the country in the sixteenth century, have long ago been abandoned; but copper, tin, and silver, are found in several places; coal of an excellent

quality abounds on the coast; and inexhaustible supplies of fine rock-salt occur at Araya. Few mines, however, are wrought anywhere, the resources of the country having been exhausted by the recent civil wars. The forests afford inexhaustible supplies of timber, dye-woods, cedar, mahogany, ebony, and other ornamental woods, together with Peruvian bark, caoutchouc, resins, and other gums. The principal cultivated plants are cacao, cinnamon, coffee, cotton, indigo, sugar-cane, tobacco, maize, and other grains; but the plantain supplies the staple food of the great majority of the people. Numerous herds of cattle and horses are reared in the *llanos*, and their hides form a valuable article of export. Agriculture is conducted in the most indolent and slovenly manner, as is usual where the climate is tropical, the soil highly fertile, the land cheap, the roads bad, the seaports few, and the markets distant. For want of communication with the seaboard, the vast natural resources of Ecuador are at present lying waste—the Brazilian and Peruvian governments preventing free access to the Amazon; while the vastly shorter distance to the Pacific across the Andes is, in most places, all but impracticable. For the fauna, see under "South America."

Ethnography.—The whole of Colombia formerly belonged to Spain (p. 575); and the population, as in the other Spanish-American states, is composed of three different races—Spaniards, Indians, and Negroes, with their mixed progeny, distinguished into five or six different classes, which, collectively, outnumber the pure races.

The Whites or Creoles, though numerically fewer, still maintain a leading position, owing to their superior education and intellectual endowments. The Indians, who belong for the most part to the Quichua and Guarani nations, are described as industrious and docile; they are usually the miners, agriculturists, herdsmen, and manufacturers of the different states. The Quichua or Peruvian, once the predominant language of Peru, still prevails in the plateau of the Andes; while the Guarani occupies the eastern half of Venezuela, together with the whole of Brazil. The Negroes are comparatively few in number, and all free—the different governments having abolished slavery in their respective dominions. In religion and education the inhabitants resemble those of the mother country. In regard to literary and intellectual culture, the people of the U. S. of Colombia rank first among the whites of South America. Manufactures are limited to coarse woollen and cotton stuffs, for home consumption; but in no case does the native industry satisfy the home demand. The great staples of the country are cacao, cotton, tobacco, sugar, coffee, indigo; and these articles, with hides, Brazil-wood, Peruvian bark, gums, and the precious metals, together with some lace, constitute the chief exports. The larger portion of the foreign trade is carried on with Great Britain, to which the three states exported, in 1873, goods to the value of £1,493,166, and from which they imported to the value of £3,704,217. Internal commerce is greatly impeded for want of roads, canals, and railways. In 1869 a treaty was concluded between the republic of Colombia and the United States of America, giving to the latter a right to construct a ship-canal across the Isthmus of Darien, with 6 m. of land on each side, to be under the control of the purchasers, but to be open to all nations in time of peace. The short line of railway between Panamá and Aspinwall, 49 m. long, was completed in 1855 at a cost of £1,500,000. Another in Bolivar is 16 m. long.

GUIANA.

Boundaries.—N. and N.E., the Atlantic; W., Venezuela and Brazil; S., Brazil, from which it is separated by the Sierra Acarai Mountains. Lat. 1° 43′—9° 20′ N.; lon. 51° 27′—61° W.

The name Guiana is applied in its widest sense to the vast tract bounded in the interior by the Amazon, the Rio Negro, the natural canal of the Cassiquiaré, and the Orinoco; but by far the greater part of this area is now included within the territories of Brazil and Venezuela—the Sierra Acarai now forming the southern frontier of colonial Guiana. Paramaribo, cap. of Dutch Guiana, is nearly on the same parallel of latitude as Bogotá, Pulo Penang, and Monrovia; and on the same meridian as Newfoundland, Santarem, and Monte Video.

Area, Population, and Political Divisions.—The area is estimated at 197,855 sq. m., being one and a half times greater than that of the British Isles; while the population is 310,171, or less than that of Mid-Lothian. It is divided into British Guiana, in the west, consisting of the three settlements, Berbice, Demerara, and Essequibo; Dutch Guiana, in the centre; and French Guiana, in the east, whose respective areas and population will be found at p. 568.

BRITISH GUIANA.—George Town 29 (Demerara), New Amsterdam 5 (Berbice).

DUTCH GUIANA.—Paramaribo 16, Amsterdam (Surinam).

FRENCH GUIANA OR CAYENNE.—Cayenne 6 (Island Cayenne).

Descriptive Notes.—**George Town**, the cap. of the British colony, situated near the mouth of the Demerara, and defended by Fort William, is built of wood, with broad streets intersecting at right angles, and traversed by canals which are crossed by a multitude of bridges. Four-fifths of the population are people of colour. **Paramaribo**, cap. of Surinam, considerably resembles George Town in its wide streets, canals, bridges, &c.: the streets are lined with orange, lemon, and tamarind trees: it is a place of extensive trade. **Cayenne**, now a penal settlement for political offenders, is a mean-looking, wretched place, and extremely unhealthy.

Surface and Climate.—The maritime region is low and level, but exceedingly fertile, consisting of a rich alluvial soil which extends into the interior for about fifty miles. The country then rises in successive terraces to the Sierras of Pacaraima (7500 ft.) and Acarai, the latter of which separates it from Brazilian Guiana. These terraces traverse the country from east to west, and have wide valleys between them, covered with dense forests. The climate is tropical, but more genial than that of most places in the torrid zone, owing to the trade-winds from the Atlantic, the sea and land breezes, and the frequent rains. It has two dry and two wet seasons on the coast, each continuing for three months. The mean temperature of the year at George Town is 81°. Violent thunderstorms occur at the

change of the seasons, and the annual fall of rain is prodigious, amounting in some places to 229 inches.

Natural Products.—Guiana is not remarkable for its minerals; but rock-crystals and red agates are found in the mountains, and a very fine variety of white clay near Essequibo. The vegetation is extremely luxuriant, especially in the lower grounds, extensive districts of which are under water during the principal rainy season. Here the soil is so fertile that thirty crops of rice have been obtained in succession without manure. The forest-trees are of the most magnificent description, especially the Mira-tree, admirably adapted for shipbuilding, its wood being equal to that of the teak-tree of the East Indies, and its height often reaching 150 ft. Fruit-trees embrace the pine-apple, guava, cabbage-tree, and several varieties of palm, and medicinal plants abound. Among cultivated plants the sugar-cane holds the highest rank, its cultivation having largely superseded the cotton and coffee formerly grown, but the latter is still extensively raised in the uplands. The fauna resembles that of other parts of tropical America, including jaguars, tapirs, sloths, monkeys, alligators, parrots, humming-birds, and flamingoes; reptiles and insects are also very numerous (see p. 574).

Ethnography.—The interior is chiefly inhabited by various tribes of Indians, who are allied to the now almost extinct aborigines of the West Indies. The coasts and settled districts are occupied by European settlers, by emancipated negroes who are very numerous, and by mixed races.

Guiana was discovered by Vasco Nuñez, a Spaniard, in 1504; the Dutch took possession of the country in 1580; the French established a colony on the Sinnamary river in 1626, and the British on the Surinam in 1630. The latter were compelled to retire by the Dutch in 1667. In 1796 Great Britain seized the Dutch possessions, which she restored at the Peace of Amiens in 1802; but what is now known as British Guiana became an English colony by the Peace of Paris in 1814. In 1831 the three settlements of Demerara, Essequibo, and Berbice were united into one colony. It is governed by a Governor appointed by the Crown, assisted by a Colonial Assembly. The total exports in 1873 amounted to £1,839,714, and the total imports to £1,618,189. Many labourers have of late years been brought to British Guiana from the East Indies, Madeira, and other hot countries, for the purpose of assisting in the cultivation of the plantations. The great staple of the various colonies of Guiana are sugar, rum, molasses, coffee, Cayenne pepper and other spices, cotton, and medicinal plants, which are exported in considerable quantities. Internal communication is very defective, the usual mode of travelling being by boats on the rivers.

BRAZIL.

Boundaries.—E. and N.E., the Atlantic Ocean; N. Guiana, Venezuela, and the United States of Colombia; W., Ecuador,

Peru, Bolivia, Paraguay, and La Plata; S., Uruguay. Lat. 1° 30′ N.—33° 45′ S.; lon. 34° 55′—72° W.

It thus embraces about 38 degrees both of latitude and longitude; the greatest length from E. to W., along the 8th parallel of S. latitude, is 2600 m.; and the greatest breadth, along the 51st meridian, 2440 m. Such, indeed, is the vast extent of the empire, both in latitude and longitude, that, with the exception of Chilè, it comes into contact with every other state on the southern continent. The city Bahia, near the central parallel, is in the same latitude as Lima, the cap. of Peru, San Felipe de Benguela, Mozambique, Capes Londonderry and Melville in Northern Australia.

Area and Population.—The probable area of this gigantic empire is estimated at 3,231,000 sq. m., or more than twenty-five times the size of the British Isles, or nearly equal to the area of the United States, including Alaska. In point of size Brazil is the fifth state on the surface of the globe, being excelled only by the British, Russian, and Chinese empires, and the United States of America. According to an official estimate, made in 1872, the population amounted to 10,700,187, or little more than twice the population of Ireland, being less than four persons to the sq. m.

Political Divisions.—The empire is divided into twenty-one provinces, which have an average area of nearly one and a third times that of the British Isles. They may be conveniently arranged into seven northern, ten eastern, and four inland provinces. The last mentioned are very thinly inhabited, and are little known to Europeans.

NORTHERN PROVINCES.

Amazonas.—Manaos or Barra 4 (Rio Negro), Olivença (Amazon).

Para.—Parà or Belem 20, Cameta 20 (Tocantins), Santarem 5 (Amazon).

Maranhão.—Maranhão 30 (Maranhão), Caxias 10 (Itapicuru).

Piauhi.—Oeiras 5 n., Paranahyba 10 (Paranahyba).

Ceara.—Aracati 2, San João do Principe 10 (Jaguaribe).

Rio Grande do Norte.—Natal 10 (E. coast).

Parahyba—Parahyba 15 (E. coast).

EASTERN PROVINCES.

Pernambuco.—Recife 116, Goyana 13 n. (coast).

Alagoas.—Porto Calvo 5 n. (coast), Penedo 14 (San Francisco).

Sergipe.—Sergipe or San Christovão 2 n. (E. coast).

Bahia.—Bahia 130, Caxoeira 15 (All Saints' Bay).

Porto Seguro.—Porto Seguro 3 (coast).

Espiritu Santo.—Victoria 8 (coast).

Rio de Janeiro.—RIO DE JANEIRO 275, Parati 10 (coast).

São Paulo.—São Paulo 22, Porto Feliz 10, Sorocaba 12 (Anhernby).

Santa Catharina.—Desterro 6 (I. Santa Catharina).

Rio Grande do Sul.—Porto Alegre 12 (L. Patos).

INLAND PROVINCES.

Parana.—Curitiba, 12 (Curitiba, *affl.* Paraná).

Minas Geraes.—Ouro Preto 9 n., Piranga 15 n. (Doce), Barbacena 12 n. (Pará).

Goyaz.—Goyaz or Villa Boa 8 (Vermelho, *affl.* Araguay).

Matto Grosso.—Cuyaba 10 (Cuyaba, *affl.* Paraguay), Matto Grosso 15 (Guaporé).

Descriptive Notes.—**Manaos** or Barra do Rio Negro, is a small but ancient town on the Rio Negro, near its confluence with the Amazon, possessing some manufactures of cordage, cotton cloth, and tiles. **Parà**, a well-built, handsome town, defended by forts, and exporting india-rubber, isinglass, rice, drugs, and cotton. **Cameta**, engaged in cultivating cotton, rice, tobacco, sugar, &c. **Maranhao**, on an island in the mouth of the river of same name, is an important seaport and commercial town, exporting cotton, rice, sarsaparilla, and rum. **Natal**, noted for its exportation of Brazil-wood. **Parahyba** has considerable commerce, and contains a military arsenal. **Recife**, including Sao Antonio, Boa Vista, and Olinda, one of the most important seaports in Brazil, and the third largest in the empire, has a fine harbour defended by a coral-reef, called a *recife*, which serves as a breakwater. **Bahia** or San Salvador, a great commercial city and seaport, and, next to the capital, the largest in the empire, finely situated on a long tongue of land; was till 1763 the cap. of the empire; it has a most imposing appearance, especially as seen from the sea. **Rio de Janeiro**, cap. of Brazil, and the largest and most commercial city in South America, lies on the western side of a noble bay, deep enough for vessels of the largest size, and so capacious that all the navies in the world might ride in it without jostling one another. The new part of the town is well built, much in the European style, with houses of granite four or five stories high, and is surrounded with the most enchanting scenery. **Porto Alegre** was founded in 1743 by a colony from the Azores. **Curitiba**, cap. of new province of Paraná, has some manufactures of coarse woollens. **Ouro Preto** or Villa Rica, so named from the rich gold mines found in its vicinity, is the cap. of Minas Geraes, the richest mining province in the empire, and carries on an active commerce with Rio. **Cuyaba** carries on an active commerce with the metropolis in diamonds, gold-dust, hides, and ipecacuanha. The diamond mines have been worked since 1719.

Surface and Climate.—The surface is about equally divided between lowlands and uplands, the former consisting of the immense level plains in the basins of the Amazon and Paraná, which occupy the entire north and west of the empire; and the latter consisting of a vast isolated plateau enclosed by the Amazon, Madeira, Paraguay, and Paraná.

Several parallel mountain-ranges traverse this plateau from north to south, separated from each other by affluents of the Amazon, and by the San Francisco. The principal ranges, commencing at the east side, are Sierra do Espinhaço, Sierra da Tabatinga, and Cordillera Grande, the greatest height of which is in the first-named range, where two summits

attain the height of 5750 ft. The climate for the most part is that of perpetual summer. On the north-east coast, and in the entire valley of the Amazon, it is characterised by great heat and moisture, though it is nowhere so oppressive as in corresponding latitudes of the African continent. At Maranhao no less than 276 inches of rain fall annually. On the higher grounds of the centre and east the temperature is considerably lower, and the fall of rain greatly less. Here, indeed, extensive tracts occur where scarcely any rain falls, while frosty nights are not uncommon. The mean temperature of the year at Rio is 74°.1; the mean winter, 69°.2; and the mean summer, 78°.2; but in the valley of the Amazon the temp. in the hottest season rises to above 100° Fah. In Brazil, as in all other regions south of the equator, the order of the seasons is the reverse of ours—December, January, and February being the hottest months of the year.

Natural Productions.—Brazil is celebrated for its valuable minerals. Next to Peru and Mexico it has, until recently, furnished more gold than any other country.

The gold is obtained from the sands of the rivers, and is specially abundant in the bed of the San Francisco. Silver, copper, iron, platinum, topazes, and beautiful amethysts, are also abundant; while the diamond mines of the inland provinces surpass all others in the world. The richest province in both gold and diamonds is that of Minas Geraes. An extensive coal-field, of the utmost importance to the future of the country, has recently been discovered in the S.E. of the empire, in province Santa Catherina. The vegetable products are still more abundant and valuable, all the tropical plants of the New World being found here in the greatest luxuriance. The forests are the most magnificent on the earth's surface, the *selvas* of the Amazon alone covering an area ten times larger than that of the British Isles, and furnishing every variety of useful and ornamental timber, gums, medicinal plants, and dyewoods. The country, indeed, received its present name from the valuable wood called *Braza*, which the Portuguese found on its shores. Cacao and caoutchouc are indigenous; while maize, wheat, rice, beans, sugar, coffee, cotton, and tobacco, have been introduced by Europeans. The root of the cassava plant, which is extensively cultivated, forms the chief food of the humbler classes; while *maté* or Paraguay tea, prepared from the dried leaves of the Brazilian holly, grows spontaneously, and forms the almost exclusive drink of the southern Brazilians. Agriculture is still in its infancy; there is not more than one 150th part of the surface under cultivation, and this portion is entirely limited to the coasts, the banks of some of the rivers, and the mining regions of Minas Geraes and Matto Grosso. The pastures are of vast extent, and prodigious herds of wild cattle roam over the *pampas* or treeless plains of the La Plata, valuable merely for their hides and horns, which are exported in great numbers, their flesh being left to the jaguar, puma, and other beasts of prey. The country also sustains an immense number of domestic animals, principally horned cattle and horses. The fauna is described under "South America," p. 574.

Ethnography.—The population of Brazil is composed of an agglomeration of many races. While Brazil remained a Portuguese colony but few women emigrated to it; consequently the European settlers largely intermarried with Indian women; and afterwards an extensive intermixture of race occurred with the Africans, who were introduced into the country as slaves. At present the whites are esti-

mated at about 1,000,000; the independent Indians at 500,000; 1,400,000 negro slaves; while free blacks and mixed races make up the remainder. The importation of slaves is no longer allowed in Brazil, having been declared illegal in 1854; and although slavery still exists on a large scale, it is of a less vigorous form than in the Spanish colonies of Cuba and Porto Rico, while public opinion is strongly and increasingly opposed to its continuance. The emperor has set a fine example to his subjects by manumitting his own slaves; and one of the best means of becoming popular in the country is for a slave-owner to liberate one or more of his slaves.

The Brazilians or whites being almost exclusively of Portuguese origin, the Portuguese language is everywhere prevalent; but the independent tribes of Indians continue to employ the dialects of their ancestors. These belong for the most part to the great Guarani branch of the American family of tongues (p. 515). The Roman Catholic religion, which is professed by the great bulk of the population, is the only one recognised by the state; but Protestantism enjoys full toleration, save that its churches must have the appearance of private dwellings. Many of the Indians have nominally embraced the Roman Catholic faith, but the remainder continue in the lowest stage of barbarism. Popular education is at a very low ebb, notwithstanding vigorous efforts on the part of the legislature to promote it. Primary education is gratuitous, and few of the teachers are ecclesiastics. There is no university in the country, but a lyceum or upper-school exists in almost every large town, and an elementary school in every parish. In 1868 there were only 107,483 pupils attending school. The morals of the people exhibit a very dark picture, while the elements required to effect a regeneration seem to be entirely wanting.

Government and Finance.—Brazil was accidentally discovered by Alvarez de Cabral in A.D. 1500, who called it Santa Cruz, and was first colonised by the Portuguese in 1531. In 1808 King John VI. of Portugal took up his residence in Brazil, and in 1815 constituted it a kingdom. In 1822 it declared itself an independent empire, under Don Pedro, who framed a constitution, vesting the government in a senate and chamber of deputies, both of which are elected either directly or indirectly by every free male possessed of an annual income of 100 *milreis*, or £10 sterling. The reigning monarch, Don Pedro II., is a strictly constitutional sovereign. The army in time of peace consists of 25,000 men, but during the late war with Paraguay it amounted to 74,000. In 1874, the navy consisted of 60 ships of war, including 17 ironclads. The revenue in the same year amounted to £18,510,250, the expenditure to £17,644,000, and the public debt to £68,398,000.

Manufactures and Commerce.—Manufactures are in their infancy, being confined chiefly to articles of primary necessity. The whites are chiefly engaged in commerce and trade; the negroes in mining and agriculture; while the artisans are from all classes in the community.

The great wealth of the country arises from its raw produce and extensive trade, for which its long line of coast, spacious harbours, and magnificent rivers, afford singular facilities. About one-half the commerce of

Brazil is with Great Britain, the remaining half being divided between France, the United States, the Argentine Republic, Portugal, and Prussia. The total value of the imports, in 1873, amounted to upwards of £19,000,000 sterling; and of the exports, to about £22,500,000. The principal exports consist of coffee, sugar, cotton, rum, tapioca, hides, horns, tobacco, and diamonds. In 1873, the value of the exports to Britain, which mainly consisted of raw cotton and unrefined sugar, amounted to £7,312,494, while the imports from Britain, consisting of manufactured cotton, linen and woollen manufactures, and wrought iron, amounted to £7,544,000. Brazil now possesses six lines of railway of a total length of 714 m., and five telegraphic lines of 3375 m.

PERU.

Boundaries.—N., Ecuador; W., the South Pacific Ocean; S., Bolivia; E., Bolivia and Brazil. Lat. 3° 30′—22° 28′ S.; lon. 67° 45′—81° 11′ W.

The extreme length is 1300 m., and the greatest breadth along the 10th par. 750 m. Lima, the cap., on the central parallel, is nearly in the same latitude as Bahia, San Felipe de Benguela, and the coast of North Australia.

Area and Population.—The area does not exceed 510,091 sq. m., or rather more than four times the area of the British Isles; while the population, according to an official estimate made in 1874, amounted to 2,500,000, of whom 1,600,000 were Indians.

Political Divisions.—Peru is now divided into 18 provinces, which, with their principal towns, are as follows:—

PIURA.—Piura 12 (N.W. coast).

AMAZONAS.—Chachapoyas 4 (Utembamba, *aff.* Amazon).

LORETO.—Mayobamba 7 n., Tarapoto 5 n. (Huallaga).

LIBERTAD.—Truxillo 7, Lambayeque 8, Payta 5 (coast).

CAJAMARCA.—Cajamarca 8 (Utembamba, *aff.* Marañon).

ANCACHO.—Huaraz 5 n. (Santa), Huavi 7 (Marañon).

JUNIN.—Pasco 14 (Huallaga), Tarma 7 (Terene).

HUANUCO.—Huanuco 10 (Huallaga).

LIMA AND CALLAO.—LIMA 120 n., Callao 20 (coast).

HUANCAVELICA.—Huancavelica 6 (Jauja, *aff.* Ucayali).

AYACUCHO.—Huamanga 16 n. (Apurimac).

CUZCO.—Cuzco 46 (Guatanai, *aff.* Ucayali).

ICA.—Ica 6 n., Pisco (coast).

AREQUIPA.—Arequipa 35 (Chili).

PUNO.—Puno 10 (Lake Titicaca).

MOQUEGUA.—Tacua 10 n., Moquegua 10 n., Arica 4 (coast).

TARAPACA.—Tarapaca n. (coast).

Descriptive Notes.—**Truxillo**, a seaport on the N.W. coast, founded in 1535 by Pizarro, who gave it the name of his native town in Spain. **Caxamarca** contains the ruins of the ancient palace of Atahualpa, the last emperor of Peru, who was assassinated here by the Spaniards. **Pasco**, the most elevated city in the world, being 13,720 ft. above the sea, is noted for its rich silver mines, which are more extensively worked than any other in Peru. **Lima**, cap. of Peru, is a regular, well-built city about 10 m. in circumference. Owing to the frequency of earthquakes, the houses are rarely more than one story high, with flat roofs and unglazed windows. It was founded by Pizarro in 1534, and the cathedral, which is splendidly decorated, contains his remains. Lima was long the commercial entrepôt for all the west coast of South America, and it still carries on a large trade through its port, Callao. Lima is the seat of the oldest university in America. **Huancavelica**, at an elevation of 11,000 ft. above the sea, is noted for its mines of gold, silver, and especially mercury. **Ayacucho**, on the route from Lima to Cuzco, contains a university and a splendid cathedral. Near it is the plain of Ayacucho, where, in 1824, the troops of Bolivar, under General Sucré, defeated the Spanish army, and thus terminated the dominion of Spain in South America. **Cuzco**, the famous cap. of the empire of the Incas, and the most ancient of their cities, was, according to tradition, founded A.D. 1043 by Manco Capac, the founder of the ancient Peruvian civilisation. In 1534 it was taken by Pizarro, who felt greatly surprised at its magnificence. The streets were wide and imposing, the palaces superb in the extreme, and the temples richly adorned with ornaments of gold and silver. **Arequipa** is a large well-built town, possessing a considerable trade and numerous manufactures of gold and silver stuffs. **Arica** is the principal seaport of southern Peru, and of Bolivia, which possesses no good seaport within its own limits. **Tacna** is the depot of European merchandise for the greater part of Bolivia. **Puno**, on the N.W. shore of Lake Titicaca, at an elevation of 12,847 ft., is, next to Pasco and Potosi, the highest town in the world: the numerous mines in its vicinity are now mostly abandoned. **Piura**, formerly **St Michael**, founded by Pizarro, was the first Spanish colony established in Peru. **Callao**, 6 m. from Lima, of which it is the port, is a strongly-fortified town, possessing the best roadstead on the Peruvian coast.

Surface and Climate.—Peru is traversed throughout its entire length by the lofty chain of the Andes, running from N.W. to S.E. and forming two grand ridges, which divides the country into three widely-different physical regions—viz., the Coast, the Central, and the Eastern Regions.

The Western or Coast Region, which is rarely more than 60 m. wide, consists of an arid, rainless, and barren district, covered with sand, and intersected by chains of hillocks that cross it from E. to W. In some parts of this district no rain has fallen in the memory of man; but above the level of 400 ft., slight showers occasionally occur. The absence of rain, however, is in some measure compensated for by the *garua*, a peculiar fog which supplies a little moisture to the soil. The Central Region consists of a lofty plateau of about 12,000 ft. of average elevation, which, though difficult of access from the coast, contains numerous cities, towns, and villages, owing to the coolness and humidity of the climate. The Eastern Region consists of immense plains, traversed by the head-waters of the Amazon, and covered with gigantic forests which extend up

the mountain-sides to upwards of 5500 ft. The climate here is very humid, the crests of the Andes intercepting the equatorial winds, which come laden with moisture from the distant Atlantic. The temperature of Lima ranges in summer between 80° and 84°, but during the prevalence of the garua it is reduced to 62°. (For the elevation of the Andes of Peru, see p. 570.)

Natural Productions.—Peru was formerly more celebrated for its mineral wealth than any other country of South America. The silver mines of Cerro Pasco, and the quicksilver mines of Huancavelica, are amongst the richest in the world. Gold also occurs in limited quantities in Cuzco, and in the various silver mines.

Nearly all the mines of the precious metals are situated in the elevated regions of the Andes, above the line to which cultivation extends—a circumstance which renders the working of them very difficult and expensive. The number of mines that have been worked is above a thousand, but most of them are now exhausted, or from other causes abandoned. Besides the precious metals, the country yields iron, copper, tin, coal, sulphur, saltpetre, and rock-salt. The flora and fauna are described in the general article on "South America." The best guano is obtained from the Chincha Islands, S. of Lima, and from the Lobos Islands, S. of Payta. Peruvian guano is now extensively exported to this country for manure, and is worth about £13 per ton. The guano was known to the aborigines of Peru, and used by them in manuring the land, before the arrival of the Spaniards. The llama, alpaca, guanaco, and vicuña, are natives of the country. The llama has been used as a beast of burden from remote times, but mules are mostly employed for travelling. The alpaca sheep is valuable for its wool, and the turtle for the oil extracted from its eggs.

Ethnography.—Nearly three-fourths of the entire population of Peru consist of aboriginal Indians; about one-fourth are creoles and mestizoes; and the remainder negroes, who number about 40,000.

The great bulk of the Indian population belong to the Quichua or Peruvian nation, who are for the most part confined to the great plateau, many of the smaller towns of which are exclusively inhabited by them, while the eastern plains are almost exclusively occupied by independent and usually heathen tribes. Quichua was the predominant language of this country under the Incas, and is still spoken by nearly a million and a half of people. It is said to be as copious and artificial as the Greek, but as yet no portion of the Scriptures has been printed in it. The remains of palaces, temples, aqueducts, and other monuments of art, found in Peru, sufficiently attest that, when the country fell a prey to Pizarro and his sanguinary companions, the inhabitants had made considerable progress in civilisation. Under the influence of the Spaniards, the character of the natives has greatly deteriorated; agriculture and pastoral employments form now their favourite occupation; while not a few are engaged in mining and other mechanical operations. The creoles, or whites, are tall, slender, and feeble, and are characterised by levity, fickleness, and incapacity of mental toil. By the terms of the constitution of 1867, there exists absolute political freedom in Peru, slavery being abolished; but the same charter prohibits the public exercise of any other religion than the Roman Catholic, which is declared the religion of the state. Education is lamentably deficient, and that of the lower orders is wholly neglected.

Government and Finance.—The form of government is republican—the constitution closely resembling that of the United States. The legislature consists of a Senate of 36 members and a Chamber of Deputies, in the proportion of one deputy to 20,000 inhabitants, and two senators to each province. The executive power is vested in a president popularly chosen for a period of five years, who is assisted by a ministry chosen by himself. The army, in 1874, consisted of 13,200 men; and the navy of 12 vessels, carrying 106 guns; the revenue amounted to 5,960,000, the expenditure to £6,751,000, and the public debt to £39,000,000.

Commerce and Manufactures.—The internal commerce is much impeded by want of good roads, but a considerable amount of trade is carried on with Brazil by way of the Huallaga. The maritime trade is chiefly with the ports on the Pacific coast, but that with Europe is considerable—the exports thither consisting of bullion, Peruvian bark, chinchilla-skins, cochineal, cotton, copper ore, alpaca wool, and especially guano.

The exports do not exceed £6,000,000 annually, of which the government monopoly of guano yields a full half. Peru sent to Great Britain, in 1869, to the value of £4,500,000, more than a half of which consisted of guano, the other items being alpaca wool and nitre. We sent in return goods to the value of £1,830,000, the principal articles being cotton and woollen manufactures. The produce of the silver mines has fallen off very materially since the end of last century, when it amounted to 5,500,000 dols. per year, while in 1855 it only amounted to 3,000,000 dols. Thus the far-famed riches of Peru are now like the legends of the past. The manufactures are not important, consisting chiefly of coarse cotton and woollen cloths made by the Indians, leather cloaks, and jewellery. A system of railways, designed to develop the mineral wealth of the country, has been in course of construction for several years. There is one line completed from Lima to Callao; another, from Tacna to Arica: total m. completed in 1875, about 1000.

BOLIVIA.

Boundaries.—E. and N., Brazil; W., Peru and the Pacific: S., Chilé and the Argentine Confederation. Lat. 10° 30′—23° S.; lon. 57°—70° 40′ W.

The extreme length from N. to S. is about 870 m.; the greatest breadth about 700 m. Chuquisaca, the cap., near the centre, is nearly on the same parallel as Victoria in Brazil, L. Ngami and Sofala in Africa; and on same meridian as Point Gaspé in Canada, St Thomas in the West Indies, and Barcelona in Venezuela.

Area and Population.—The area is estimated at 374,480 sq. m., or three times the area of the British Isles; but no regular survey of the country has ever been made. According to the latest official

estimate, taken in 1866, the population amounted to 1,987,352, being two-thirds the population of Scotland.

Political Divisions.—The republic presently consists of nine departments, all of which are named after their respective capitals, except in the case of the two departments, Beni and Atacama.

BENI.—Trinidad 4, Exaltacion (Mamoré, *sub.-aff.* Madeira).

LA PAZ.—La Paz 76 n. (L. Titicaca).

SANTA CRUZ.—Santa Cruz 10 n. (Mamoré).

COCHABAMBA.—Cochabamba 41 n. (Mamoré), Tapacari (Mamoré).

CHUQUISACA.—CHUQUISACA or SUCRE 24 n. (Pilcomayo, *aff.* Paraguay).

POTOSI.—Potosi 23 n. (Pilcomayo).

ORURO.—Oruro 8 (Desaguadero).

ATACAMA.—Cobija 2 (Pacific), Atacama (Loa).

TARIJA.—Tarija 6 (Tarija, *aff.* Vermejo).

Descriptive Notes.—**Trinidad**, cap. of the department Beni or Mojos, contains 4000 inhabitants. **La Paz**, near the eastern shore of L. Titicaca, and near the base of the snow-capped mountain Illimani, is the commercial metropolis and largest town in Bolivia. The cinchona bark obtained here is the best in the world. **Santa Cruz**, cap. of the principal rice-growing state in Bolivia, is the frontier town of the Spanish race, who do not penetrate farther inland. **Cochabamba**, a beautiful city, with a large cathedral and a magnificent palace. **Chuquisaca** or **Sucre** ("place of gold"), cap. of Bolivia, on the eastern side of the Andes, and at an elevation of 9342 feet above the sea, has a university and a fine cathedral, but has neither trade nor manufactures, and owes all its prosperity to its being the seat of the legislature. **Potosi**, at the foot of the far-famed silver mountain of Cerro de Potosi, at an elevation of 13,330 ft. above the sea. The mountain is perforated in all directions by the mines, only 26 of which are now worked, while 1800 are standing idle. The silver here was accidentally discovered by an Indian, upwards of 300 years ago. **Oruro**, another mining town, where 11 silver mines are still worked. **Cobija**, the only seaport of Bolivia; merchants prefer it to Arica, where they have to pay a high duty to the Peruvian Government.

Surface and Climate.—The centre and west are covered with ramifications of the Andes, which here, as in Peru, divide into two cordilleras, enclosing an elevated plateau in which is the Lake of Titicaca, 12,847 ft. above the sea (p. 571). The narrow region between the Pacific and the Andes is barren, nearly rainless, and known as the desert of Atacama. The region east of the Andes consists of immense plains watered by the head-streams of the Amazon and Parana, which have their origin in the eastern cordillera, and is covered with immense forests. The towns are for the most part situated in the plateau region, many parts of which are fertile and well cultivated. The climate resembles that of Peru, but varies much in different parts of the country, according to the elevation and the dis-

tance from the equator. On the plateau it is cold, and in some places even rigorous, while in the low-lying plain of the east it is insupportably hot, humid, and pestilential.

Natural Productions.—Bolivia is now the most important mining country in South America, but many of the mines have become exhausted or filled with water, and comparatively few of them are now worked with advantage, a result mainly owing to their distance from the coast and the want of roads.

The precious metals are found chiefly in Silurian strata, where these approach the igneous rocks. Gold-dust occurs in many of the streams that flow down the sides of the eastern cordillera of the Andes. The silver mines of Potosi are, next to those of Pasco, the most valuable in the world. Mercury was discovered at Huancavelica, in 1567, and for many years yielded a large profit. Copper is everywhere abundant, while iron, tin, lead, antimony, nitre, and sulphur, are found in the department Oruro, south-east of Lake Titicaca. The tin mines in this department are among the richest in the world; and rock-salt, in large veins, occurs in the Cerro de Potosi. The botany of Bolivia is as various as its climate, which ranges from tropical heat to perpetual winter. Forests of boundless extent cover the eastern plains, and the lower zones of the cordilleras. These yield timber fit for every purpose, fruits of every variety, ornamental and dye woods, Peruvian bark, and many other valuable drugs. Paraguay tea abounds in the department Beni; and coca, a plant which the aborigines masticate as the Malays do the betel-nut, and without which they pine and die, grows spontaneously in the hot plains of the interior. Cultivated plants embrace cacao, vanilla, caoutchouc, cotton, tobacco, indigo, rice, barley, oats, maize, sugar-cane, and potatoes. The wild animals include the tapir, jaguar, leopard, monkey, amphibious reptiles, birds, and fishes in great numbers.

Ethnography.—About one-third of the population are whites, of Spanish origin, who are most numerous in the mining districts and in the valleys of the eastern cordilleras. The remainder are Indians, of the Aymara and Quichua nations; of negroes and mulattoes, who are chiefly fugitives from Brazil; and of Cholos, who have sprung from the union of the European with the Indian population.

The Aymara Indians were among the nations formerly subject to the Incas of Peru, and now dwell on the plateau of Titicaca, within the limits of that ancient empire. They number about 372,000, and are probably descended from the same stock as the Quichua Indians, whom they resemble in language, disposition, manners, and customs. They are an intelligent, industrious race, and are largely engaged in agriculture, mining, various branches of manufacture, and in pastoral occupations. A small number of them have been gained to Christianity by the efforts of Roman Catholic missionaries. Bolivia, under the name of Upper Peru, formed part of the viceroyalty of Buenos Ayres, till, on the subversion of Spanish authority, it achieved, with Peru proper, its independence. Soon afterwards it separated from the latter country, and became an independent republic, assuming the name Bolivia, in honour of its illustrious liberator, General Bolivar, who in 1826 drew up its first constitution.

Government, Commerce, and Finance.—The executive government is vested in a president, who is elected for a term of four years;

the legislative functions are exercised by a body consisting of two chambers—a senate and a house of representatives, both elected by universal suffrage. The constitution makes ample provision for personal and political liberty—securing religious toleration, the freedom of the press, and the independence of the tribunals.

Roman Catholicism is alone professed by the white inhabitants, but the Church is not endowed by the State. The standing army amounts to 3000 men; the receipts and expenditure to nearly £500,000 each. Commerce is greatly restricted by the physical character of the country—stupendous mountain-chains and an arid desert separating the productive portion of the country from the Pacific, and 2000 m. of river navigation from the Atlantic seaboard. The republic has but one seaport, the town of Cobija, and the greater part of its commerce is carried on through Peru. The foreign trade is consequently very limited, consisting chiefly in the export of the precious metals, Peruvian bark, skins, soap, tobacco, and alpaca wool to Europe, and of grain and cacao to Peru; while the imports are mostly confined to iron, hardware, silk, and a few other articles. The total exports, in 1875, amounted to £1,340,000, the imports to £1,288,000, and the public debt to £3,200,000. Till within the last few years the agricultural and mineral resources of the country lay dormant, nearly all the internal trade being carried on by pack-horses and mules; but recently good roads have been constructed by English capitalists and engineers, and concessions have been granted for a line of railway between Cobija and Potosi, which is to be united to the Peruvian railway from Arequipa to Puno. This line is about 400 m. long, but is not yet commenced.

CHILÉ.

Boundaries.—N., Bolivia; W., the South Pacific Ocean; S., Patagonia; E., La Plata, or the Argentine Confederation. Lat. 23°—43° 20′ S.; lon. 68°—74° W.

Chilé, however, claims the whole of Patagonia and Tierra del Fuego, but the claim is disputed by the Argentine Confederation. Including Chiloe, the length is 1400 m.; while the breadth, between the crest of the Andes and the Pacific, does not on an average exceed 100 m. Few other countries of equal dimensions enjoy so large an extent of seaboard. Santiago de Chilé, the cap. of the republic, situated near the centre, is nearly on the same parallel as Buenos Ayres, Cape Town, Sydney, and the northern extremity of New Zealand; and nearly on the same meridian as San Domingo, in the W. Indies, and Lake Titicaca.

Area and Population.—The area is estimated at 116,043 sq. m., or rather less than the British Isles; the population, according to the census of 1875, amounted to 2,068,447, being only two-thirds the population of Scotland.

Political Divisions.—Chilé is now divided into sixteen provinces, besides the colonial possession of Magellan.

ATACAMA.—Copiapo 11, Caldera (N.W. coast).
COQUIMBO.—Coquimbo, or La Serena 12, Huasco (coast).
ACONCAGUA.—San Felipe 9, Quillota 11 (Aconcagua).
VALPARAISO.—Valparaiso 98 (coast).
SANTIAGO.—SANTIAGO DE CHILE 148 n. (Maypu).
COLCHAGUA.—San Fernando (Rapel).
CURICO.—Curico 9 (Mataquito).
TALCA.—Talca 18 (Maule).
MAULE AND LINARES.—La Constitucion 6, Linares 6 n. (Maule).
NUBLE.—Chillan 19 (Itata).
CONCEPCION.—Concepcion 18 (coast).
ARAUCO.—Arauco 1 (coast).
VALDIVIA.—Valdivia 5 (coast).
CHILÖE.—San Carlos 2, Castro 4 (island Chiloe).
LLANQUIHUE.—Puerto Montt 15 (coast).
MAGELLAN.—Punta Arenas (str. of Magellan).

Notes on Towns.—**Copiapo**, the most northern town in **Chilé**, and in the centre of the principal mining district, exports various mineral products. **Caldera**, a seaport town, 40 m. north of Copiapo, with which it is now connected by a railway, which, in some places, is carried to a height of 6000 ft. above the level of the sea. **Coquimbo**, one of the chief seaport towns of the republic, has extensive copper-smelting works. **San Felipe** has valuable mines of copper in its vicinity. **Valparaiso**, the commercial metropolis of Chilé, on the Pacific coast, a large and flourishing city, and one of the principal seats of trade on the whole west coast of America. The early mariners, finding here a secure haven after encountering the dangers of C. Horn, gave the city its present name, which signifies "the valley of Paradise;" but its scenery scarcely deserves that designation. **Santiago de Chilé**, cap. of the Chilian republic, contains a university: here, on Dec. 8, 1863, in the Church of La Compánia, occurred the most terrific conflagration ever witnessed in South America, when 2100 females perished in the flames. The town is situated amid the sublimest scenery, near the foot of the Andes. It is handsomely laid out, but owing to the prevalence of earthquakes, the houses have only one story. Santiago is connected with Valparaiso by a railway 111 m. long. **Concepcion** contains a college, and possesses an excellent roadstead. **Valdivia**, the penal settlement of Chilé and Peru. **Puerto Montt**, cap. of the new province Llanquihue, established in 1853, is named after Don Manuel Montt, the president of the Chilian republic when the town was founded.

Surface and Climate.—Chilé consists of a long, narrow territory, isolated from the rest of the continent by the majestic chain of the Andes, which here form a single ridge, with an average elevation of 12,000 ft.

Near the centre of the chain stands the stupendous Aconcagua, the giant of the Chilian Andes, 23,301 ft. above the sea, and with the exception of Sorata, in Bolivia, by far the loftiest mountain in the New World. Aconcagua is not a volcano, but no fewer than 14 volcanic peaks are

enumerated among the Chilian Andes, among the loftiest of which are Chillan and Villarica, each of which attains to a height of 16,000 ft. Five of these volcanoes are now in a state of activity; while earthquakes are of common occurrence, and frequently cause tremendous devastation. The northern portion of the country is rainless and barren, but the central portion is luxuriantly fertile, and has a delicious climate, the heat being tempered by its greater elevation and by the regular recurrence of sea-breezes. Here the rainy season occurs between May and August. The average summer temperature on the plains is from 60° to 70°, that of winter being from 40° to 50°. The months of January and February are the hottest in the year, the thermometer then frequently rising to 95° Fah. in the shade. In the central parts of the country storms of hail, thunder, and lightning are common in the winter season. Snow covers the loftier summits of the Chilian Andes throughout the year, the lower limit of the snow-line being, in the N., 17,000 ft., and in the S. 8300 ft.

Natural Productions.—Chilé is by far the most flourishing of the Spanish American republics—the salubrity of her climate, the fertility of her soil, the abundance of her natural resources, and, above all, the great extent of her sea-coast, giving her a decided superiority over the other countries on the western side of the continent.

Her mineral resources are especially great, embracing gold, silver, copper, lead, iron, zinc, mercury, antimony, manganese, arsenic, tin, sulphur, nitre, salt, coal, and lignite. The extraction and exportation of copper has of late years rapidly increased, and this commodity now forms the grand staple of the country. The silver mines occur in the highest part of the Andes, which also contain precious stones, as the agate, jasper, rock-crystal, &c. The working of the coal-mines is gradually extending, and though the coal is inferior in heating power to ordinary English coal, it is extensively used for steam and smelting purposes. The north is almost wholly barren, but maize, wheat, barley, and other European grains are grown extensively in the centre and south. Here vegetation is very abundant; agriculture is well understood, and the implements of husbandry are of the best description. Chilé is the native region of the potato, which is found wild on the slopes of the mountains, as also of the Araucaria imbricata, now so common in our shrubberies. Fruits are so numerous and abundant that in many places they may be had without money: the figs and olives are of the best quality, and the grape is cultivated with success. Among the animals of prey the chief place must be assigned to the puma or American lion, and to the condor, a magnificent species of vulture peculiar to the Andes, but most common in Peru and Chilé. (See under "Argentine Confederation.")

Ethnography.—In the northern and central provinces the population consists for the most part of the descendants of the Spaniards; but to the south of the Biobio the country is inhabited almost exclusively by Indians, who belong to the Araucanian nation, and number about 70,000 persons.

Though nominally subject to the Chilian sway, the Indians have hitherto stoutly maintained their independence—a privilege which they are likely soon to lose, now that the Chilefios have formed Llanquihue into a province. They are more advanced in civilisation than the wandering tribes of the pampas; they excel in weaving, in the manufacture of pottery-ware, and in cultivating the land; but they are said to be ad-

dicted to habits of intemperance. The whites, or Chilefios, are described as contrasting favourably with those of the same race in other parts of Spanish America, especially in activity and industry. The advance of civilisation among them is rapid, and more has been done by the Government in diffusing the benefits of education than in any of the neighbouring republics. There are a university and a lyceum at Santiago, and schools and seminaries in several other places. The religion of the state is the Roman Catholic, and the public exercise of any other form of worship is excluded by law. Yet there are in Valparaiso two Protestant places of worship, whose existence is not unknown to the Government. The great mass of the people remain in the grossest ignorance, and morality is at a very low ebb. Illegitimacy is fearfully prevalent among the humbler classes of society. In some parts of the country, from 27 to 30 per cent of the population are said to have a stain on their birth. Closely connected with this is the extraordinary rate of mortality among the young.

Government, Army and Navy.—The struggle of the colonists for independence began in 1810, and terminated successfully in 1818, by the battle of Maypu and the formation of a republic. According to the constitution of 1833, the government is vested in a president elected for five years, a senate of 20 members who hold office for nine years, and a chamber of deputies chosen for a period of three years, consisting of one member for every 20,000 inhabitants. The army in 1869 amounted to 3750 men, but during the war with Spain, in 1866, it numbered 5300, together with 29,698 militia. The navy consists of twelve steam-vessels, manned by 400 men, and carrying about 30 guns. The Chilian navy incurred great losses during the late struggle with Spain. The Revenue for 1874 amounted to £3,514,000, the Expenditure to £3,322,000, and the Public Debt to £9,629,000.

Commerce and Manufactures.—The foreign commerce of the Chilian republic is considerable, and is mainly carried on with Great Britain, to which nearly three-fourths of the exports are sent. These consist chiefly of copper and silver ore, wheat, flour, hides, and tallow. Total exports in 1874, £7,308,384, of which £4,452,000 were sent to the United Kingdom. The exports of that year also included for the first time a considerable quantity of raw cotton. The principal imports consist of cotton and woollen manufactures and hardware from England; silks from France; and linen from Germany: total amount, in 1874, £7,683,899, of which £3,450,695 came from Great Britain. The commercial navy, in 1874, consisted of 259 vessels, of 57,111 tons burden. As compared with the other South American republics, Chilé has made rapid progress in almost every department of natural industry. Her manufactures consist of earthen and copper wares, cordage, linens, soap, brandy, and other articles of home consumption.

Internal Communication.—Chilé was among the first states in South America that engaged in the construction of railways. In 1875 there were 615 m. open for traffic, and a good many more in course of construction. The principal lines already completed are

that from Valparaiso to Santiago; from Santiago to Talcá; from San Antonio to Caldera; and from Talcahuano to Chillan Curico.

Patagonia and Tierra del Fuego.—This extensive country, comprising the entire southern extremity of South America, is bounded on the N. by La Plata and Chilé; on the W. by the Pacific; on the S. by the Antarctic Ocean; and on the E. by the Atlantic. Extending from lat. 38° to 55° 55′ S., it is about 1100 m. long, by 550 m. wide at its broadest part. The area is roughly estimated at 400,000 sq. m., and the population at 30,000. The northern extremity is nearly on the same parallel as Cape Egmont in New Zealand, Cape Wilson in Australia, and is 260 m. S. of Cape Agulhas, the southern extremity of Africa. The whole of Patagonia, north of Tierra del Fuego, is now claimed as a colonial possession of Chilé, which has given it the name of the Territorial Colony of Magellan (p. 591). The western shore is deeply indented by the ocean, and lined by numerous islands and bold projecting headlands. The Andes extend in one immense unbroken chain along the western side, having an elevation ranging from 8000 ft. in the north, to less than 3000 ft. in the south, and containing numerous volcanic peaks. Their summits are covered with perennial snow, whence glaciers descend almost to the sea-shore. The mountainous region is densely clothed with forests, the climate being excessively moist, owing to the prevalence of westerly winds. The eastern part of the country, on the other hand, is arid and sterile, the surface consisting of a series of terraces interspersed with lakes and morasses. Wheat, maize, and pulse, are raised in small quantities in the north. Large flocks of wild cattle and horses roam over the country, but the guanaco is the characteristic quadruped. The Patagonian Indians, described by the early voyagers as a race of giants, are a tall muscular race, generally averaging about six feet in height, leading a nomadic life, and subsisting by the produce of the chase and by fishing. The shortness of their limbs, and the disproportionate length of the upper part of the body, make them appear remarkably tall on horseback, as they almost always are when out of doors; but the natives of the mountain region, and of the Fuegian Archipelago, are a stunted race, sunk in the deepest degradation.

THE ARGENTINE CONFEDERATION, OR LA PLATA.

Boundaries.—N., Bolivia; W., Chilé; S., Patagonia; S.E., the Atlantic; E., Uruguay, Brazil, and Paraguay. Lat. 21°-41° S.; lon. 54°—70° W.

The extreme length from north to south is 1350 m., and the average breadth about 700 m. Buenos Ayres, the federal cap. (lat. 34° 39′), is in the same latitude as Santiago de Chilé, the Cape of Good Hope, and Sydney; and in the same longitude as Cape Breton, George Town in British Guiana, Asuncion in Paraguay, and the Falkland Isles.

Area and Population.—The area is estimated at 896,800 sq. m., or more than seven times the area of the British Isles; while the population, in 1869, amounted to 1,840,000, or less than two persons to each sq. m.

Political Divisions.—The Confederation embraces fourteen independent states, which are under the authority of a military governor, called the Director of the Argentine Confederation.

BUENOS AYRES. — BUENOS AYRES 178 (Rio Plata), Rosario 30 (Paraná).

ENTRE RIOS.—Paraná 6 (Paraná).

SANTA FE.—Santa Fé 10 (Salado, *affl.* Paraná).

CORRIENTES.—Corrientes 11 (Paraná), La Cruz (Uruguay).

JUJUY.—Jujuy 3 n. (Vermejo, *affl.* Paraná).

SALTA.—Salta 12 (Salado).

TUCUMAN.—Tucuman 17 n. (Medanos, *affl.* Dulce).

CATAMARCA.—Catamarca 6 n. (Medanos).

SANTIAGO DEL ESTERO.—Santiago 8 (Dulce).

RIOJA.—Rioja 4 n. (Bermejo, *affl.* Lake Guanacache).

CORDOVA.—Cordova 29 (*affl.* Lake Salado).

SAN JUAN.—San Juan de la Frontera 8 (Patos, *affl.* L. Guanacache).

MENDOZA.—Mendoza 8 (Lake Mendoza).

SAN LUIS.—San Luis 4 (on a river which loses itself in the sand).

Descriptive Notes.—**Buenos Ayres**, so called on account of its salubrity, cap. of state of same name, and now again of the Argentine Confederation, is a large, handsome city, situated on the south side of the estuary of La Plata, 150 m. from its mouth: it is the chief port of the Confederation, and one of the principal commercial cities in South America. It is noted for its jerked beef: the *saladeros* or slaughter-houses here are on a very large scale. **Rosario**, on the right bank of the Paraná, 190 m. above Buenos Ayres, is the eastern terminus of the Chilian railway across the Andes, now completed as far as Mendoza, a distance of 747 m. **Paraná**, cap. of state of same name, and formerly of the Argentine Confederation, is an active bustling town. **Corrientes** is admirably situated for becoming the emporium of an extensive district of country. **Salta** is noted for its trade in hides and mules. **Tucuman**, cap. of the finest and richest state in the Confederation, with the exception of Buenos Ayres. Here, in 1816, the first congress of deputies from the several provinces of the Confederation proclaimed their independence. **Cordova**, on the main road from Buenos Ayres to Potosi, on the line of the international railway across the Andes, has some manufactures of cloth and a trade in wine. It was at one time the ecclesiastical metropolis of the Confederation. Here, in March 1871, was held a grand International Exhibition. **Mendoza**, on the eastern slope of the Andes, is a main entrepôt for the trade between Buenos Ayres and Chilé.

Surface and Climate.—Excepting the portion of the country forming the eastern slope of the Andes, drained by the Salado, Colorado, and Rio Negro, and a detached ridge of high ground between the Paraná and Urugnay, nearly the whole surface of the Confederation is embraced within the basin of the Paraná, and forms two immense plains of only a few feet in elevation above the sea.

The southern plain, named the *Pampas*, is a dead level, destitute of trees, but covered with luxuriant pasturage, and interspersed with a mul-

titude of salt lakes, some of which (as Guanacache and Bevedero) are of large size. The channel of the Paraná, at a distance of 400 m. from its mouth, is said to be only one foot in elevation above the sea. The northern part of the country belongs to the plain of *Gran Chaco*, or great desert, which extends from the 28th to the 18th south parallel, and from longitude 58° to 63° W. The northern portion is covered with tall grass and thistles, while the southern, consisting of an arid and desert plain, is inhabited by roving Indians. The climate is characterised by great diversity, but is in general hot and very dry—the Andes on the one side and the mountains of Brazil on the other, intercepting the rain-bearing winds from the two great oceans; but in the eastern pampas rain is abundant. The mean annual temp. at Buenos Ayres is 62° Fah., summer 72°, and winter 52°. The high plateaux exhibit every variety of climate, but in general the heat is not excessive, and the climate is more salubrious than that of other countries equally near the tropics.

Natural Productions.—The mineral resources of the Confederation are scarcely inferior to those of the other South American republics, though, owing to the want of good natural outlets, and other means of transport, they have remained hitherto of little commercial importance.

Gold mines, said to be of great richness, are being worked by the Anglo-Argentine Company; while silver, copper, lead, coal, alum, and sulphur occur in various localities, and salt effloresces in large quantities on the surface of the plains in the salinas of the west. Except in the neighbourhood of the towns but little of the soil is cultivated, the remainder being given up to the vast herds of horses and cattle which roam in an almost wild state. Wheat, maize, barley, and other grains, and numerous fruits, are grown in the southern states; and in some of the northern, tobacco, sugar, cotton, indigo, rice, and other tropical productions, are cultivated. The cocoa-tree, Paraguay tea, cochineal-cactus, and the aloe are largely cultivated, as also the vine in the western provinces. Most of the South American wild animals are found in La Plata, as the puma, jaguar, armadillo, tapir, tajassoo, biscacho (a kind of rabbit which is very numerous, the skins of which are now brought to England for furs), deer, and some kinds of monkeys. The guanaco is found in the plains and on the mountains, but the wild llamas, vicuñas, and alpacas, only in the cold regions on the elevated table-lands. The water-hog or carpincho, the largest known rodent, is very common on the banks of the Paraná. The most common birds are the emu, condor, green parrot, wild-duck, pigeon, quail, the carrion-vulture, and several other rapacious birds.

Ethnography.—The whites are more numerous in the Argentine Republic than in any other state in South America. The bulk of the population are of Spanish descent, and are named Creoles. Of other European nations the Italians are by far the most numerous, amounting in Buenos Ayres alone to 70,000; British, who are chiefly engaged in sheep-farming, number 32,000; while there are about the same number of Spaniards and French. The Indians number about 40,000, and are chiefly located in the Gran Chaco and on the Rio Negro. The Creoles do not lead the same indolent and voluptuous life as in the neighbouring Spanish republics, but busy themselves in pastoral and agricultural operations. The Roman Catholic is almost exclusively the religion of the white population, as in all the

Spanish American republics; but other denominations are tolerated. Primary schools of a very inefficient character exist in some of the towns, but are unknown in the rural districts, and the education of the people is sadly neglected.

Government and Finance.—The estuary of the Rio de la Plata was discovered by Joan Diaz de Solis in 1514, the knowledge of which was further extended by Sebastian Cabot in 1527. The country was settled by the Spaniards in 1553, under whom it was erected into a viceroyalty. In 1811 it joined the insurrection against Spain, and in 1816 became independent. In 1835, De Rosas was elected to the dictatorship of Buenos Ayres, which he exercised with almost absolute rule till he was defeated by Urquiz, the governor of Entre Rios. The present constitution bears date from 1853, and provides that the executive power of the Confederation shall be vested in a president, and the legislative power in a national congress consisting of 78 deputies. Each of the provinces has a governor of its own, and retains the management of its own internal affairs. The army, in 1875, consisted of 10,700 men, besides the national guard of Buenos Ayres, which numbers 19,867 men. The navy comprises 28 small steamers, including 2 ironclads. The Revenue in the same year amounted to £4,860,000; the Expenditure to £4,000,000; and the Public Debt to £16,000,000.

Commerce and Manufactures.—The wealth of the country consists mainly of its animal productions—wool alone constituting about one-half of the exports, and the remainder consisting of hides, tallow, jerked beef, horns, horse-hair, and ostrich-feathers. In 1873, the total value of the exports amounted to £6,600,000, of which £2,604,000 were sent to the United Kingdom, and the remainder to North Germany, France, and the United States. The imports consist chiefly of manufactured cotton and woollen goods, machinery, coal, and iron. In 1873, the total imports amounted to £11,500,000, of which Great Britain sent £3,729,221. The manufactures are unimportant, with the exception of coarse woollen stuffs, turned articles, and morocco leather at Cordova. A network of railways has been in progress for several years, and in 1875 there were 1000 m. open for traffic. Among the principal lines may be mentioned that from Rosario to Cordova, 247 m.; and that from Villa Nueva to Mendoza, 400 m. In the same year there were 8000 m. of telegraph lines in operation. A good deal of internal traffic is carried on between the different provinces, the roads being good, and the rivers affording boundless scope for internal communication.

PARAGUAY AND URUGUAY.

Boundaries.—Paraguay is bounded on the N.E. by Brazil, N.W. by Bolivia, and on the other sides by La Plata, from

which it is separated by the Paraná, Paraguay, and Pilcomayo. Lat. 21° — 27° 20′ S. Uruguay, or Banda Oriental, has Brazil on the N. and E.; the Argentine Confederation on the W.; the Rio de la Plata on the S.; and the Atlantic Ocean on the S.E. Lat. 30°—34° 52′ S.; lon. 53° 30′—58° 23′ W.

Asuncion, the cap. of the former state, is in the same latitude as C. Corrientes, in East Africa, and the centre of Australia; while Monte Video, the cap. of the latter, is nearly on the same parallel as Buenos Ayres, Santiago de Chilé, Cape of Good Hope, and Sydney.

Area and Population.—The area of Paraguay is very uncertain, as the boundaries have not been settled; but it is usually estimated at 75,000 sq. m., or five-sixths that of Great Britain; while Banda Oriental has an area of 66,800 sq. m., or somewhat less than Paraguay. The population of the former state, in 1874, or immediately after the war with Brazil, was estimated at 103,000, including Indians; while that of the latter, in 1873, was 450,000, or only one-third that of Wales.

Political Divisions.—The first-mentioned republic is subdivided into 25, and the other into 13 departments. The towns are few in number, and are chiefly as follows :—

PARAGUAY.—Asuncion 8, Villa Rica, n., Concepcion 5 (Paraguay).

URUGUAY.—Monte Video 126, Maldonado 2, San José, Colonia 3 (Rio de la Plata), Paysandu (Uruguay).

Descriptive Notes.—Asuncion or **Assumption**, at the confluence of the Paraguay and Pilcomayo, possesses considerable trade in tobacco, sugar, hides, timber, and especially *yerba* or Paraguay tea. **Concepcion**, the depot to which the Paraguay tea is brought from the forests on its way to Asuncion. **Monte Video**, so named from a mountain overlooking it, on which stands a lighthouse, is an important commercial city, the rival of Buenos Ayres, which it greatly surpasses as a seaport. It is situated on a peninsula, and is well fortified. The exports are principally animal products, especially the essence of meat, 50,000 lb. weight of which is shipped monthly. **Maldonado** and **Colonia** are good seaports, and possess considerable trade.

Surface and Climate.—The surface of Paraguay is hilly on the Brazilian frontier, where the Sierra Amambahy forms the water-parting between the Paraná and Paraguay, flat in the centre, and marshy in the S.W.; while the climate, though tropical, is greatly modified by the inequalities of the surface. The mean temp. of Asuncion is 85° Fah., with an occasional rise to 100°. Uruguay is level along the coast, and destitute of wood, but the interior is full of ravines and heights clothed with forests, and abounding with wild animals. The climate, though damp, is generally temperate and healthy; in winter, cold winds and heavy rains are prevalent, but ice is unknown, except on the higher elevations.

Natural Productions.—These are, in general, the same as in the Argentine Confederation, to which, indeed, both countries physi-

cally belong. The precious metals and other minerals common to the other countries of South America have not, as yet, been found in Paraguay; but, in 1864, valuable mines of gold, silver, copper, lead, and sulphur have been discovered in Uruguay, in the department Minas. In the forests of Paraguay are found at least 60 varieties of timber, including the caoutchouc or india-rubber tree and many dye-woods. Many of the hills are literally covered with yerba or Paraguay tea, which is largely exported to most parts of South America, and which is no contemptible substitute for the tea of China. At every meal, and at every hour of the day, it is drunk. Hot water is poured on the powdered leaf, then a lump of burned sugar, and sometimes a few drops of lemon-juice, are added, and the infusion is drunk off quickly. Cattle, horses, and sheep form the principal wealth of the population in Uruguay, their produce, consisting of wool, hides, horns, jerked beef, and tallow, forming the main articles of export. Jerked or Monte Video beef is now largely exported to Britain, and sold at less than one-half the price of ordinary meat. In 1868, the exports of Paraguay amounted to £520,000, and of Uruguay to £2,579,273.

Ethnography.—In Paraguay the great bulk of the population consists of Indians of the Guarani nation, who here approach nearer the whites than any other of the aboriginal tribes of America. Spain took possession of Paraguay in 1536, but in 1811 it recovered its independence. From 1814 to 1840 it was ruled by Dr Francia, under whose despotic sway all foreigners were excluded. Its independence as a separate state was recognised by the Argentine Confederation in 1852. In 1862 Don Francisco Lopez succeeded his father as Dictator. In 1865 he quarrelled with the three neighbouring states—Brazil, La Plata, and Uruguay. After a desperate struggle of seven years, during which he manifested extraordinary courage and military skill, he was defeated and killed in the battle of Aqui Daban, March 1870, a full half of the male inhabitants of Paraguay having already perished. The country now enjoys peace, but is practically ruined. Uruguay, formerly a province of Brazil, declared its independence in 1825, and was recognised as a free state by the treaty of Monte Video in 1828. Civil war and misrule have since seriously impeded its prosperity, while more recently the country has had to contend unceasingly against the intrigues and hostility of Buenos Ayres. A colony of Protestant Vaudois has recently been established in the country, from whose superior culture and activity much good may be augured. In the suppression of the revolution in Paraguay in 1874, the Brazilian troops took an active part, and Brazil has thus assumed a virtual protectorate over it.

River-System of South America.—The rivers of South America belong to four great basins—viz., those of the Pacific, Atlantic, Caribbean Sea, and the continental basin of Lake Titicaca.

Basins inclining to the Caribbean Sea.

Rivers.	*Towns.*
Magdalena,	Mompox, Honda, Bogota, n.
Cauca, *l*	Antioquia, Medellin, Popayan.
Sogamozo,	Socorro, n., Tunja.
Caribbean Sea,	Chagres, Aspinwall, Cartagena, Sta. Marta.
G. of Venezuela,	Maracaybo, Coro.
L. Maracaybo,	Truxillo, n.
Zulia,	Pamplona, n.
Chama,	Merida.
Co. Venezuela,	Puerto Cabello, Valencia, n., La Guayra, Caracas, Barcelona, Cumana, Cariaco.

Basins inclining to the Atlantic.

Orinoco,	Angostura.
Apuré, *l*	San Fernando, Achaguas, Varinas, n.
Portuguesa, *l*	Barquisimeto.
Guanaré,	Guanaré.
Co. Guiana,	George Town, Paramaribo, Cayenne.
Amazon,	Olivença, Caxamarca, Guamachuco, n., Huari.
Madeira,	Balsamo.
Guaporé,	Matto Grosso.
Mamoré,	Exaltacion, Trinidad, Sta. Cruz, n., Cochabamba.
Rio Negro, *l*	Manaos or Barra.
Ucayali,	Cuzco, n.
Jauja, *l*	Ayacucho, n., Huancavelica.
Huallaga,	Mayobamba, n., Tarapato, n., Huanuco, Pasco.
Pastaza, *l*	Riobamba.
Pauté, *l*	Cuença.
Tocantins,	Pará, Cameta.
Araguay, *l*	No towns.
Vermelho,	Goyaz or Villa Boa.
Maranhao,	Maranhao.
Itapicura,	Caxias.
Paranahyba,	Paranahyba, Oeiras, n.
Jaguaribe,	Aracati, San Joaõ do Principe.
E. Co. Brazil,	Natal, Parahyba, Recife, Goyana, n., Porto Calvo, Sergipé.
San Francisco,	Penedo.
All Saints' Bay,	Bahia, Caxoeira, n
E. Co. Seguro,	Porto Seguro.
Doce,	Ouro Preto, n., Piranga, n.
S.E. Co. Brazil,	Victoria, Rio de Janeiro, Parati.
Lake Patos,	Porto-Alegre.
Paraná,	Maldonado, Monte Video, Buenos Ayres, Colonia, Rosario, Parana, Santa Fe, Corrientes.
Uruguay, *l*	Paysandu.
Quarto,	San Luis.
Salado,	Santa Fe, Salta.
Paraguay,	Corrientes, Asuncion, Concepcion.
Vermejo,	Jujuy, n.
Tarija, *l*	Tarija.
Pilcomayo,	Asuncion, Chuquisaca, Potosi, n.
Cuyabá, *l*	Cuyabá, n.
Curitiba, *l*	Curitiba, n.
Anhernby,	S. Paulo, P. Felix.
Pará,	Barbacena, n.

Basins inclining to the Pacific.

Str. of Magellan,	Punta Arenas.
Co. Chilé,	Valdivia, Arauca, Concepcion, Valparaiso, Coquimbo, Huasco, Caldera, Copiapo.
Maule,	Cauquenes, Talca.
Itata,	Chillan.
Rapel,	San Fernando.
Maypu,	Santiago de Chile, n.
Co. Bolivia,	Cobija.
Loa,	Atacama.
Co. Peru,	Arica, Islay, Pisco, Tacna, n., Moquegua.
Quilca,	Arequipa.
Rimac,	Callao, Lima.
N.W. Co. Peru,	Huauri, Truxillo, Lambayeque, Piura, Payta.
G. of Guayaquil,	Tumbez, Guayaquil.
Esmeraldas,	Quito.
Patia,	Pasto.
G. of Panama,	Panama.

Basin of Continental Streams.

Lake Titicaca,	La Paz, Puno, Chuquito.
Desaguadero,	Oruro.

OCEANIA.

OCEANIA is the name given by modern geographers to a sixth division of the globe, comprising all the islands and archipelagos in the Pacific Ocean from the Bonin Islands, S. of Japan (lat. 27° 40′ N.), to Macquarie Island, S.W. of New Zealand (lat. 54° 50′ S.), and from Sumatra (lon. 95° 25′ E.) to Easter Island, about 2000 m. off the coast of Chilé (lon. 110 W.)

It thus embraces 82½° of latitude and 160° of longitude. Its extreme length, from Achen Head in Sumatra to the meridian which passes through Cape San Lucas in Old California, is upwards of 11,000 m.; while the breadth, from north to south, is more than half that distance. The aggregate area and population are extremely uncertain, as many of the islands have been but recently discovered, while all of them are as yet very imperfectly explored. Probably, however, the former does not fall short of 4,500,000 sq. m., or one-fifth larger than the continent of Europe; while the latter is generally estimated at about 30,000,000, or less than the population of Great Britain at the last census.

Divisions.—Oceania is now usually divided into four great sections, which are tolerably well defined, not only by geographical position, but also by various physical characteristics; for example, their geological formation, their botanical character, and the animals and races of man which inhabit them. These large divisions are—1. Australasia or Melanesia, in the south-west, embracing the continent of Australia, Papua, New Zealand, and numerous smaller islands contiguous to them; 2. Malaysia, also called the Eastern or Indian Archipelago, in the north-west, embracing the numerous islands and archipelagos that extend from the north-western shores of Australia and New Guinea to Further India and China; 3. Micronesia, formerly reckoned a part of Polynesia, in the north-east, and consisting of the numerous small islands lying north of the equator and east of the Malay Archipelago; 4. Polynesia, or the South Sea Islands, comprising the numerous archipelagos in the South Pacific Ocean east of Australasia. (See Johnston's Map of Oceania in his 'School Atlas of General Geography.')

I. AUSTRALASIA.

The first of the above-named divisions, termed Australasia from its southern position in relation to Asia, and Melanesia from the dark complexion of its inhabitants, lies about midway between Africa and South America, having Malaysia on the N.W., the Indian Ocean on the W. and S., and the South Pacific Ocean on the E. and N.E. It extends from the equator to lat. 54° 50′ S., and from lon. 113° to 180° E. The total area is supposed to amount to about 3,428,000 sq. m.—that is, to the area of Europe without the islands; and the population to about 2,500,000.

This area embraces the continent of Australia, Tasmania or Van Diemen's Land, New Zealand, Auckland Isles, Antipodes Island, Chatham Isles, Norfolk Island, New Caledonia, New Hebrides, Queen Charlotte Isles, Salomon Isles, the Louisiade Archipelago, New Britain, New Ireland, Admiralty Isles, Papua or New Guinea, Arroo Isles, and Timorlaut. "Viewed as a whole, this extensive region is characterised by a very spare population, by a paucity of rivers, by a great preponderance of sandy deserts, and by the singularity of its animal and vegetable products, which exhibit few species, and generally few individuals, but possess such a peculiar organisation that, in many instances, no parallel to it occurs in other regions of the globe." The aborigines consist of three distinct races—viz., 1. The natives of Australia, who are probably Turanians (p. 611); 2. The Papuans, in New Guinea, New Britain, New Ireland, Salomon Islands, New Hebrides, the Louisiade Archipelago, and New Caledonia, forming, in the opinion of many, a distinct variety of the human race, whose numerous dialects have little affinity with any other language; and, 3. The Maories, in New Zealand, a Malayo-Polynesian race.

AUSTRALIA.

Geographical Position.—Australia, the smallest of the six continents, has Papua and Malaysia on the N., from which it is separated by Torres Strait and the Timor Sea; the Indian Ocean and Bass Strait (the latter separating it from Tasmania) on the W. and S.; and the Pacific Ocean on the E. Lat. 10° 40′—39° 11′ S.; lon. 113°—153° 47′ E.

In form, it is of an irregular onion shape, having its greatest extension from E. to W., in which direction it measures about 2500 m., while its extreme breadth from N. to S. does not exceed 1980 m. Sydney, the cap. of New South Wales (lat. 33° 54′ S.), is nearly on the same parallel as Cape Town, Santiago de Chilé, and Buenos Ayres.

Area, Population, and Political Divisions.—The area is estimated at 2,945,227 sq. m., or about five-sixths of the area of Europe, and the population in 1871 at 1,565,284 (including 50,000 aborigines), being about one-fourth the population of Ireland. The entire continent is a possession of Great Britain, which, during the last eighty-five years, has established five highly prosperous colonies on its eastern and southern shores, viz.:—

Colonies.	Area in Eng. Square Miles.	Population in 1871.*	Year when established.
New South Wales, . .	308,560	503,981	1788
Victoria, ...	88,451	729,868	1851
South Australia, . .	380,602	188,995	1834
Western Australia, . .	975,824	24,785	1829
Queensland, . . .	668,259	120,066	1859
North Australia, . .	523,531	...	...

New South Wales.—Sydney 135, Paramatta 8 (Port Jackson),

* In December 1874, the population of the *seven* colonies was 1,838,328.

Goulburn 5 n. (Hawkesbury), Newcastle 10, Maitland 10 (Hunter) Bathurst 7 (Macquarie).

VICTORIA.—Melbourne 194 n., Sandridge 5, Williamstown 6, Geelong 23 (Port Philip), Belfast 3, Portland 3 (Portland Bay), Sandhurst 28 n., Castlemaine 9 (Loddon), Ballarat 64 (Nurriwillan).

SOUTH AUSTRALIA.—Adelaide 27 n., Port Adelaide 10 (G. of St Vincent), Kooringa 2 (Burra Creek), Wallaroo 2, Moonta 5 (Spencer Gulf).

WESTERN AUSTRALIA.—Perth 3, Freemantle 2 (Swan River), Augusta (S.W. coast).

QUEENSLAND.—Brisbane 20 (Moreton Bay), Ipswich 8 (Brisbane), Rockhampton 7 (Fitzroy), Somerset (N. coast), Burketon (Albert).

NORTH AUSTRALIA.—Port Darwin (N. coast).

Notes on Towns.—**Sydney**, on the southern shore of the magnificent harbour of Port Jackson, is a large, elegant, commercial city, containing numerous public buildings. Sydney was founded in 1788 as a penal settlement, the inlet of Port Jackson being better adapted for that purpose than Botany Bay, to which the convicts had been transported. At the urgent request of the Australian colonists, the penal settlement has been abolished. The commerce and importance of the city have greatly increased since the discovery of gold at Bathurst in 1851. The Botanic Garden, the finest in Australia, occupies thirty-eight acres of ground, and contains an immense collection of exotic plants from all countries. **Parramatta**, next to Sydney the oldest town in the colony, is noted for its orchards and vineries. **Goulburn**, 128 m. from Sydney, is the present terminus of the Great Southern Railway, and an episcopal city. **Newcastle**, at the mouth of the Hunter, and the principal shipping port north of Sydney, which it nearly equals in the extent of its tonnage, is chiefly noted for its valuable coal-mines, which give employment to a large number of workmen. Upwards of 1000 tons of coal are exported daily. **Maitland**, equal in size to Newcastle, and in an extremely fertile district termed the "Granary of New South Wales." Here the grape is widely cultivated, the other crops being maize, wheat, barley, oats, and potatoes. Coal of an excellent quality is found in the neighbourhood. **Bathurst**, the principal town in the recently-discovered gold region. **Melbourne**, cap. of Victoria, on the Yarra Yarra, three miles from its mouth in Port Philip, is the great emporium for all foreign goods intended for the colony. Since the discovery of the gold-diggings its commerce has been enormously developed. The exports in 1860 were valued at £12,962,000, about £8,624,000 of which represented gold. **Sandridge**, now the port of Melbourne, is situated on Hobson's Bay, about three miles from the cap., with which it is connected by a railway. **Williamstown**, the former port of Melbourne, situated on Hobson's Bay, opposite Sandridge, and eight miles from the cap., has a patent slip, graving-docks, and all conveniences for repairing vessels. **Geelong**, the most important town in Victoria next to Melbourne, which it surpasses in the convenience of its situation and the salubrity of its climate. It is the chief port for the wool of the colony. **Sandhurst**, a mining town in the Bendigo district, and a place of great trade, with a railway to the capital. It is the headquarters of a rich auriferous country. **Castlemaine**, a place of great importance in the early days of the gold-fields, has for some time past been retrograding, the yield of gold having greatly declined. **Ballarat**, the second most important

town in the colony, owes its present position to its being the centre of perhaps the richest gold-yielding district in the world. The precious metal was discovered here in 1851. **Adelaide,** cap. of South Australia, on the Torrens, and about eight miles from **Port Adelaide,** its seaport, is a thriving commercial town, busily engaged in the exportation of wool and copper. **Perth,** on the Swan River, twelve miles above its mouth, is the cap. of Western Australia, but otherwise a place of little importance. **Freemantle,** at the mouth of the Swan River, is the port of Perth, and was, till 1868, a convict station. **Brisbane,** cap. of Queensland, a colony established in 1859, and now attracting numerous emigrants, is a rapidly increasing town. **Ipswich,** the second town in the colony, twenty-five miles west of Brisbane, which it rivals in the extent of its commerce. **Rockhampton,** on the Fitzroy, 400 m. north of Brisbane, may be regarded as the cap. of northern Queensland. It is the port of shipment for the produce of the Peak Downs copper and gold mines. **Somerset,** near Cape York, a commercial station, founded in 1865 by the Imperial Government in connection with that of Queensland as a naval rendezvous and coal depot, where her Majesty's ships may command the traffic through Torres Strait in the event of war with a foreign power. With the exception of **Burketon,** on the Albert River, flowing into the Gulf of Carpentaria, this is now, since the abandonment of **Port Essington,** the only settlement north of Rockhampton. **Port Darwin,** on the N. coast of North Australia, and the only settlement in this extensive region (provisionally attached to the colony of South Australia), has a splendid harbour, suitable to vessels of the largest tonnage, with a comparatively healthy climate, good soil, and plenty of water and grass; but the only practicable communication with Adelaide, its mother city, is by sea, a journey of several thousands of miles.

Surface and Mountains.—Australia is the smallest and least known of all the continents, with the exception of the south circum-polar. It is also, with the same exception, the only one lying entirely in the southern hemisphere. It lies S.E. of the great continent of the Old World, in the same way that South America lies S.E. of the great continent of the New; but while the latter is joined to the northern continent by a long continuous isthmus, the former is more loosely connected with Asia by a double row of immense islands. Like both the other southern continents, Australia terminates in a point at the south, to the east of which lie large islands; but New Zealand is more distant from Australia than Madagascar is from Africa, or the Falkland Islands from South America. It is essentially a level continent, and of very moderate elevation, consisting of an extensive low-lying interior, encircled by a border of more elevated land traversed by chains of mountains which rarely rise more than 5000 ft. above sea-level. Another peculiarity of this continent is, that along its north-eastern coast, at a distance of from 20 to 60 m. from the shore, is a broad wall of coral reef, some 1200 m. long, from a few hundred yards to a mile in width, and in depth reaching from the bed of the ocean to the surface. Between this reef and the coast ships can safely navigate, while the waves of the Pacific break against the outer side in long lines of white foam. The principal mountain-range lies along the eastern shore, at a distance varying from 50 to 150 m. Its average elevation is about 3500 ft., its loftiest summits

being in the Australian Alps, between New South Wales and Victoria, where Mount Kosciusko rises to an elevation of 7308 ft., and Hotham and Latrobe in the same range to nearly an equal altitude. All the loftier summits of this range are covered with snow in winter and spring. Farther north are the Blue Mountains, in the same lat. as Sydney, reaching a height of 3500 ft., and the Liverpool Range, 4000 ft. On the frontier of Queensland is Mount Lindesay, which has an altitude of 5700 ft., but beyond this, to the northward, the mountains never exceed 4000 ft. in height, and decrease to less than 1000 ft. as they approach Cape York. Proceeding westwards, the shores of the Gulf of Carpentaria are low and flat, and interspersed with clumps of gum-trees. Arnhem Land, as the great north-central peninsula is called, is a plateau of from 2000 to 3000 ft. in elevation. The more northerly part of the N.W. coast is bold, with granitic and basaltic headlands; but here the interior remains wholly unknown. A chain of low hills lines the coast of the whole of Western Australia, generally at a distance from the sea of about 250 m., some of the summits attaining an elevation of about 3500 ft. Near the S.W. angle of the continent the Darling and Roe ranges approach much nearer to the ocean, and rarely exceed 1500 ft. in height. Proceeding eastward along the southern coast of the continent, the country is an arid desert. The entire coast of the great Australian Bight, extending from Cape Arid to Cape Catastrophe, is bold and lofty, rising from 300 to 600 ft. above the sea. Here no rivers enter the ocean, and the interior consists of cheerless desert. The Gawler Range, in South Australia, does not exceed 2000 ft. in elevation; but the Flinders Range, between Lakes Torrens and Frome, and running north and south, ascends to a height of about 3000 ft. Lastly, we enter the colony of Victoria, where we meet the Grampians, attaining, in Mount William, an elevation of 5600 ft., the Pyrenees, and the Australian Alps.

Though much of the interior remains unexplored, the continent has now been traversed in almost all directions. The greatest feat in recent Australian discovery was performed by M'Douall Stuart in 1862; starting from Adelaide, he travelled across the continent, emerging at Port Darwin in the extreme north. Ten years later, and along this route, the great Overland Telegraph, connecting the Australian colonies with England, has been constructed, and the exploration of the interior has thereby been greatly facilitated. Thus Col. Warburton in 1873, leaving the Overland Telegraph near lat. 21°, and proceeding N.W. and W., reached Nickol Bay in Western Australia. In 1874, Mr Forrest achieved a still greater feat, by starting from Champion Bay on the W. coast, and travelling eastward nearly along the par. of 26° till he reached Peake station, on the great telegraph line. "It may be reasonably assumed that the whole interior region west of the 140th degree of east longitude and north of the 30th degree of south latitude is of the most unpromising kind—that it is without rivers and without mountains—and that it forms an inhospitable and dreary desert similar to that traversed by Stuart, Sturt, Burke, Wills, and Forrest—and that beyond the desirability of simply determining the fact, there is little to tempt or repay an explorer in the desolate region included within the limits now mentioned. For-

tions—possibly indeed considerable tracts—of a more attractive character may be found along the coast, and extending to a few miles inland along the northern and western shores; but in all probability these will constitute but a mere fringe surrounding a widespread Sahara."*

This region occupies the same relative position in the southern hemisphere as the great Sahara of Africa does in the northern—the tropic of Cancer passes through the centre of the one, and that of Capricorn through the centre of the other. This interior desert has been supposed by some to be the bed of a sea of recent date; and a great district of lakes in the south of it would seem to bear out this conjecture. Lake Eyre, the largest of these, is a great shallow swampy lake of variable extent, and with salt-encrusted shores. Its height above the sea-level has been found to be only 70 ft., and its area is estimated at 4100 sq. m., or nearly three times that of Great Salt Lake in Utah; while Lake Torrens, which is perhaps at a less height above the sea, is not properly a lake, but an extensive depression, with great shallow salt pools surrounded by sandhills strewn with boulders. Though only separated by a narrow isthmus of twelve miles in breadth from the head of Spencer Gulf, yet there is no communication between them; and none of the lakes in this region, or in Western Australia, have any outlet.†

Capes and Peninsulas.—Cape York in Queensland, the most northern point of the continent; Point Dale and Coburg Peninsula, in North Australia; Capes Londonderry and Leveque, on the N.W. coast; Steep Point, the western extremity of the continent; Cape Leeuwin, the S.W. extremity; Cape Spencer, in South Australia; York Peninsula, between Spencer Gulf and Gulf of St Vincent; Capes Otway and Wilson, S. of Victoria; Cape Howe, the S.E. extremity of the continent; Cape Byron, the eastern extremity; Sandy Cape and Cape Melville, on the N.E. coast.

Gulfs and Straits.—Australia is but little indented by arms of the ocean, and the coasts are generally deficient in good harbours, though Port Jackson in New South Wales, and Port Denison in Queensland, are among the best in the world. Torres Strait, between Australia and Papua; Gulf of Carpentaria, between Cape York and Point Dale; Admiralty Gulf and Exmouth Gulf on the N.W. coast; Shark Bay and Géographe Bay on the W. coast; Great Australian Bight, Spencer Gulf, St Vincent Gulf, Encounter Bay, and Port Philip, all on the southern coast; Bass Strait, between Victoria and Tasmania; Corner Inlet, Botany Bay, Port Jackson, Port Stephen, and Moreton Bay, all on the east coast.

Rivers and Lakes.—Australia is more deficient in its inland waters than any of the other continents; while, with one important exception, the rivers that exist are not navigable to any considerable extent.

The only great river hitherto explored is the Murray, which, with its main affluents, the Darling and the Murrumbidjee, has its sources in the western declivity of the range of mountains that runs along the eastern coast. Following its principal sinuosities, the Murray is nearly 2000 m. in length, while the area of its basin is upwards of 500,000 sq. m. It has

* Sir Charles Nicholson, Bart., in 'Proceedings of Royal Geographical Society,' March 28, 1870.

† Keith Johnston, jun., in his 'Handbook of Physical Geography,' p. 72.

a general south-westerly course, and enters the Indian Ocean at Encounter Bay, in the south-eastern angle of South Australia. The Murray is navigable up to Albury, 378 m. S.W. of Sydney; while its affluent, the Murrumbidjee, is navigable to Gundagai, 240 m. from Sydney. The Brisbane, falling into Moreton Bay, is navigable for 75 m. North of it are the Fitzroy and the Burdekin, flowing to the east coast. On the north coast may be mentioned the Mitchell, the Flinders, the Albert, and the Roper, all flowing into the G. of Carpentaria. In the west of North Australia, the Victoria runs northward into Queen's Channel; while in Western Australia are the Fortescue, Gascoyne, Murchison, and Swan, all flowing westward into the Indian Ocean. The principal lakes, as already indicated, occur in South and West Australia, as Lakes Torrens, Eyre, Frome, Gregory, and Gairdner, in the former colony; Lakes Austin and Moore in the latter, and Amadeus in Alexandra Land.

Climate.—As the northern third of Australia is situated in the torrid zone, the climate of that portion is necessarily subject to periodical rains and a high temperature. In general, the climate of the Australian colonies may be considered as very dry—the amount of moisture not exceeding that of Cape Colony and the southern parts of South America, which places they also resemble in their mean annual temperature. The Sydney summer is described as very delightful, and resembling that of Avignon or Constantinople; while its winter is compared with that of Cairo and Cape Town. Mean annual temperature 62°.7, mean summer 69°.6, and mean winter 54°. It is remarked that along the S.E. coast there is a constant variation in the climate of each season through a cycle of twelve years; for six years there is a constant increase of drought, the sixth being entirely rainless; for the next six years there is a regular increase of humidity, the last being a year of almost incessant rain. Mean annual temperature at Melbourne 57°.6, spring 57°.5, summer 65°.2, autumn 58°.6, winter 49°. The average rainfall at Sydney is 58 in., at Melbourne 32 in., and at Brisbane 55½ in. In the interior plains Sturt experienced a heat of 131° in the shade at mid-day in summer, but at night the temperature became cool, and even cold. The moisture brought by the northern monsoons, which are drawn towards this continent in summer by the ascending current caused by the heat of a vertical sun, is expended on the northern margin of the continent in the summer rains; but these do not usually penetrate farther than from 200 to 300 m. from the coast. A rainless summer characterises the rest of the continent; and the winter rains from the south do not seem to be experienced beyond the 30th parallel of latitude.

Minerals.—The geological structure of this continent is characterised by great uniformity, the mountain-ranges of the coast consisting of primary and palæozoic rocks; while the whole of the interior, so far as yet known, is of tertiary formation.

The finest practical result on record of a thorough knowledge of geology deserves to be stated in connection with these mountain-ranges. The close resemblance of their structure to that of the Ural Mountains led Sir Roderick I. Murchison, in 1845, to predict that they would be found

to be auriferous; and, six years afterwards, Mr Hargraves discovered extensive deposits of the precious metal at Bathurst and Wellington, in New South Wales; while since that time the most valuable and extensive gold-fields in the world have been found in various and widespread localities, especially in the province of Victoria. At the International Exhibition, held in London in 1862, a gilded pyramid was exhibited representing the quantity of gold exported from Victoria from 1851 to 1861. It was 45 ft. high, 10 ft. sq. at its base, and contained 1492 cubic ft. The total weight of the gold thus represented was 1,793,995 lb., equal to £104,649,728 sterling. Very little gold has as yet been found in South or West Australia; but the former contains inexhaustible deposits of copper of the finest quality. Coal is abundant in New South Wales (especially on the river Hunter), together with iron ore, which will probably, ere long, be turned to good account; coal is also found on the Swan River, in West Australia, a region which also abounds in mercury, zinc, lead, copper, iron, and other ores. Coal is scarce, but iron plentiful, in South Australia; while gold, copper, and coal are plentiful in Queensland. On the whole, the mineral productions of Australia equal, if they do not surpass, in value those of any other continent.

Botany and Agriculture.—The native flora of Australia and Tasmania comprises Schouw's 24th Botanic Region, named by him "Brown's Region," in honour of the late Robert Brown, justly styled by Humboldt "the prince of botanists."

This region embraces one of the most peculiar floras on the earth's surface. The native trees are all evergreens, and the forests consist principally of gum-trees, of which there are upwards of 100 species, acacias, and shrubs or small trees allied to the heath tribe. Of 5710 plants hitherto discovered in this continent, no fewer than 5440 are peculiar to it. Robert Brown alone, in 1805, carried to this country 4000 species, nearly all of which were new to science. Australia produces no native fruits capable of being used as food, excepting a few berries and a kind of chestnut; but along the Murchison River, in Western Australia, are found wild tobacco, and an esculent tuber resembling the potato. All the principal food-plants, however, have been introduced, and are cultivated with great success in the different settlements; while the vine, fig, orange, peach, and numerous other fruits, flourish in the greatest luxuriance wherever they have been tried. In some places, especially in Queensland, the sugar-cane, indigo, and cotton plant are successfully cultivated.

Zoology.—This continent, with the adjacent groups of islands which, with it, constitute Melanesia, forms one of the two provinces into which naturalists have divided the Oceanic Zoological Kingdom. The fauna of this kingdom is the most peculiar and remarkable in the world—nearly all its 150 species of mammals being peculiar to it; the quadrumana, pachydermata, and ruminantia are wholly wanting; the marsupialia, comprising 105 species, and the edentata, 3 species, are all peculiar to it; while of the 21 rodents, no fewer than 19 species are unknown in any other part of the world. The kangaroo, wombat, opossum, bandicoot, porcupine ant-eater, ornithorhynchus or water-mole, and many other marsupial animals, are all peculiar to this continent and the islands in its immediate vicinity. Of these animals, the largest and most characteristic are the kangaroos, of which there are several species; while the most

anomalous, as its name indicates, is the ornithorhynchus, which has the bill and feet of a duck, the body and fur of a mole, and the internal structure of a reptile, which lays eggs like a bird, and suckles its young like a mammal. The kangaroos are vegetable-feeding animals, browsing upon herbage like the ruminants, which some of them also resemble in chewing the cud. Some are of great size, being nearly as tall as a man when in their usual erect position; but others are as small as the common hare, an animal which, in general appearance, they greatly resemble. None of the larger beasts of prey are found in Australia; the most formidable is the dingo or native dog, which resembles a wolf, and commits serious ravages upon the property of the settlers. When discovered by Europeans, Australia contained no quadrupeds useful to man; but all our domestic animals have now been introduced, especially the sheep, cow, and horse, and they are found to thrive admirably.*

Ethnography.—The population of Australia consists, for the most part, of British settlers and their descendants, together with a considerable sprinkling of Germans; about 35,000 Chinese, chiefly engaged in gold-digging; and of some 50,000 aborigines. The English language is the only one spoken in the colonies, and the Christian religion is universally practised. There is now no religious establishment in any of the colonies, each denomination supporting its own ministers. Elementary education is aided by grants from the state. In 1870 there were 3149 schools, attended by 196,416 pupils. There are at Sydney three colleges, a grammar-school, and a university, which has the status of British universities in the matter of

* The following description of the Mammalia of this continent, extracted from M. Louis Agassiz's 'Essay on Classification' (London, Longman & Co., p. 60), connot fail to interest the student:—"The most interesting result of the earliest investigation of the fauna of Australia was the discovery of a type of animals, the Marsupialia, prevailing upon this continental island, which are unknown in almost every other part of the world. Every student of Natural History now knows that there are no *Quadrumana* in New Holland, neither monkis nor makis; no *Insectivora*, neither shrews, nor moles, nor hedgehogs; no true *Carnivora*, neither bears, nor weasels, nor foxes, nor viverras, nor hyænas, nor wild-cats; no *Edentata*, neither sloths, nor tatous, nor ant-eaters, nor pangolins; no *Pachyderms*, neither elephants, nor hippopotami, nor hogs, nor rhinoceroses, nor tapirs, nor wild horses; no *Ruminantia*, neither camels, nor llamas, nor deer, nor goats, nor sheep, nor bulls, &c.: and yet the Mammalia of Australia are almost as diversified as those of any other continent. In the words of Waterhouse, who has studied them with particular care, 'The Marsupialia present a remarkable diversity of structure, containing herbivorous, carnivorous, and insectivorous species; indeed, we find amongst the marsupial animals analogous representations of most of the other orders of Mammalia. The *Quadrumana* are represented by the phalangers, the *Carnivora* by the dasyuri, the *Insectivora* by the small phascogales, the *Ruminantia* by the kangaroos, and the *Edentata* by the monotremes. The *Cheiroptera* are not represented by any known marsupial animals, and the *Rodents* are represented by a single species only. The hiatus is filled up, however, in both cases by placental species; for bats and rodents are tolerably numerous in Australia; and if we except the dog, which, it is probable, has been introduced by man, these are the only placental mammalia found in that continent.' Nevertheless, all these animals have in common some most striking anatomical characters, which distinguish them from all other mammalia, and stamp them as one of the most natural groups of that class.

conferring degrees. There is also an endowed university at Melbourne on a very costly scale.

The aborigines are, generally speaking, weak and puny in body, and much inferior, both in moral and intellectual qualities, to the African negro. Their skin is of a dark sooty colour, their stature short, their frame slight, and better adapted for feats of agility than of strength. The male sex wander about in a state of almost perfect nudity, while the females are protected by a partial covering of kangaroo-skins. Of arts and manufactures they have scarcely any idea: their cutting instruments are of stone, and their arms of offence consist of spears, bomerangs, clubs, and tomahawks. Of agriculture, even in its rudest form, they have not the slightest knowledge. They possess no flocks or herds, nor do they seem to have any knowledge of barter, or even of property, holding everything in common. They have no houses, but live in holes in the earth, or under the shelter of bark screens. In short, they take rank with the Bosjesmans of Southern Africa and the Fuegians of South America, constituting one of the lowest and most degraded races of mankind. Their number is rapidly decreasing in the presence of the white man, as, by the latest estimates, there were only 1700 in New South Wales, 1900 in Victoria, 5046 in South Australia, 15,000 in Queensland. It has been estimated that, on the average, an area of 50 sq. m. is required for the subsistence of a single native in the interior, owing to its sterile character, and the absence of bread plants and domesticated animals; so that, at the present moment, the aggregate native population does not probably exceed 50,000 souls. Although the numerous tribes of this continent have each a distinct dialect, which differs greatly from the others in its vocables, they are all radically united. Though quite unlike the Malayan, recent investigations have established a strong resemblance between them and the Dravidic dialects of the wild Hill-tribes of the Dakhan, which must be regarded as belonging to the great Turanian family. These now widely-distant peoples have also in common certain rites, ceremonies, and weapons of war—as, for example, that singular weapon, the bomérang. In the mean time, therefore, it seems probable that Australia was peopled from Southern India, *via* Ceylon, Sumatra, Java, Sandalwood, and Timor.

Government and Finance.—In 1855 the colonies were placed on the footing of self-government; and since that time they have entered with increased ardour upon the path of progress. In each of the colonies the governor is of Imperial nomination, and is assisted in his duties by an executive council consisting of responsible ministers. The legislative power is exercised by a parliament consisting of a Legislative Council and a House of Assembly. The statute laws of England form the recognised code in all the Australian colonies, precisely as in British America. With the exception of appointing the Governor, the Imperial Government rarely interferes in the legislation, unless when some great national interest is involved. In most respects these colonies may be regarded as practically independent. Recently they have had under consideration the important subject of a federative union, but as yet nothing definite has been arranged. The Revenue of the five colonies, in 1869, amounted to £8,925,774; the Expenditure, to £8,249,285; and the Public Debt to £27,229,816, of which £12,534,000 belonged to Victoria, and was incurred by the construction of railways and other public works within that colony. For later statistics see p. 612.

Commerce and Industry.—Thirty years ago Australia scarcely appeared in the commerce of the United Kingdom, and three of its five colonies had then no existence. They now collectively contain above a million and a half of British colonists, and in wealth and civilisation occupy the foremost rank among European colonial possessions. In 1873 their aggregate Exports amounted to £35,714,000; and their Imports to £36,630,000. Including Tasmania and New Zealand, the following tables show the commercial and financial condition of each of the seven Australian colonies for the year ending 31st December 1873:—

Colony.	Total Exports.	Total Imports.	Exports to United Kingdom.	Imports from United Kingdom
	£	£	£	£
N. S. Wales, .	11,815,829	11,088,388	6,658,000	5,137,000
Victoria, . .	15,302,464	16,533,856	9,741,000	7,873,000
S. Australia, .	4,587,859	3,829,830	2,802,000	2,344,000
W. Australia, .	265,217	297,328	149,000	158,000
Queensland, .	3,542,513	2,881,726	942,000	965,000
Tasmania, .	893,556	1,107,167	378,000	429,000
N. Zealand, .	5,521,800	7,241,062	3,702,000	3,781,000
	41,929,228	42,979,357	24,372,000	20,689,000

Colony.	Revenue.	Expenditure.	Public Debt.
	£	£	£
N. S. Wales, . . .	3,324,713	2,333,166	10,842,415
Victoria, ...	3,943,691	3,504,953	12,445,722
S. Australia, . . .	937,648	839,152	2,174,900
W. Australia, . . .	134,832	114,270	35,000
Queensland, ...	1,120,034	956,335	4,786,850
Tasmania, ...	293,753	299,995	1,477,600
N. Zealand, ...	1,420,216	2,119,524	12,509,546
	11,174,887	10,167,395	44,272,033

The chief articles of Australian produce are gold, copper, and wool. Victoria is the colony most remarkable for its gold. From the discovery of that metal in 1851 to 1874, the gross produce of the Victoria goldfields amounted to £177,821,125. Of its other exports wool ranks next to gold, the total value exported in 1873 having been £4,509,833, the greater part of which was sent to the United Kingdom; and then follow tallow, hides, copper, and corn. The staple article of exportation from New South Wales is wool, of which £2,503,381 were sent to the United

Kingdom in 1873; and next come gold, copper, and coal. The coal-mines of this colony are of great extent, and practically inexhaustible. Wool, corn, and copper are the principal articles exported from South Australia, the first-mentioned alone amounting to about £1,400,000 per annum. From Western Australia we derive considerable quantities of wool, with copper and lead ores; and from Queensland, wool, tallow, and latterly raw cotton. The articles imported by the Australian colonies consist mainly of British textile manufactures, metallic goods, machinery, timber, tea, grain, spirits, and tobacco. The principal occupations of the people in the various colonies are those of agriculture, stock-raising, and mining. In New South Wales, wheat, maize, barley, and oats are largely cultivated; while sugar, cotton, and tobacco succeed admirably, and of late years considerable attention has been given to the production of wine. Mining operations give employment to a large fraction of the people in Victoria and New South Wales. South Australia has become the granary of this continent, and the wheat and flour are objects of just pride to the settlers, while the culture of the vine is a recognised branch of industry. At the International Exhibition of 1862, the wheat of South Australia gained the first prize, and the cotton of Queensland was pronounced superior to that from any other part of the world. The Onega Plains in Queensland afford pasturage of the richest description: here countless numbers of horses, cattle, and sheep, roam in a half-wild state.

Internal Communication.—In 1874 there were 1621 m. of railway open for traffic in Australia, of which Victoria had 539 m., New South Wales 402, South Australia 133, and Queensland 264.

Progress of Discovery.—On the evidence of a chart now deposited in the British Museum, the earliest discovery of Australia must be attributed to the Portuguese; but the first recorded visit was that of the Dutch, who, in 1606, discovered a portion of the north coast, and gave the country the name of New Holland. Cape York, its N.E. extremity, was seen by the Spanish commander, Luis Vaes de Torres, a few months afterwards, though little was known of the country until after Dampier, Wallis, and afterwards Cook, explored its various coasts. Captain Cook landed in Botany Bay in 1770, now precisely 100 years ago; and 82 years ago—the mere span of a human life—the first British settlement was formed at Port Jackson. Port Philip, and the whole extent of coast lying westward of it, was not discovered till 1802; while the district of that name, which was formerly a dependency of New South Wales, and now called Victoria, was not colonised till 1835. The colony of Western Australia, or Swan River, was established in 1829, and, after the cessation of transportation to Tasmania, was made a penal settlement, at the request of the colonists. South Australia, established in 1834, was colonised in 1836; while Moreton Bay, or Queensland, formerly a portion of New South Wales, was constituted a distinct colony in 1859. The famous gold discoveries were made in 1851; in 1855 the colonies were placed on the footing of self-government; and since that time they have entered with increased ardour upon the path of progress.

TASMANIA.

Tasmania, formerly Van Diemen's Land, a colonial possession of Great Britain, lies S.E. of Australia, from which it is separated by Bass Strait, 160 m. wide. Lat. 40° 40′—43° 38′ S.; lon. 144° 37′—148° 25′ E.

In form this island is heart-shaped; its greatest length, which is nearly the same as the breadth, is 180 m. The area is estimated at 26,215 sq. m., or about one-fourth of that of Great Britain; while the population, in 1871, was 99,328, being 4 persons to each sq. m.

Chief Towns.—Hobart Town 20 (Derwent), Launceston 10 (Tamar), Richmond 1 (Coal River).

Hobart Town, the capital, in the same latitude as the south of Chile and Christ Church in New Zealand, is a well-built town, on the Derwent, about 20 m. from its mouth in Storm Bay. The estuary of the river is navigable for the largest vessels up to the town, which possesses a fine wharf, a college, and an extensive foreign commerce. **Launceston**, on the northern side of the island, 120 m. from Hobart Town, is the second town in importance in the colony, and carries on a considerable traffic with Victoria and South Australia.

Surface and Climate.—The surface is mountainous and highly diversified, consisting of mountain-ranges, lofty table-lands, isolated peaks, and fertile valleys and plains, generally clothed with forests. The mountains of Tasmania, instead of being arranged into distinct chains, as in most other countries, are dispersed in irregular groups and isolated peaks over the greater portion of the surface. The loftiest summits in the western half of the island are, Cradle Mountain, 5069 ft., and Dry's Bluff, 4340 ft.; while on the eastern side are, Ben Lomond, 5010 ft., and Mt. Wellington, near Hobart Town, 4257 ft. These are covered with snow for about eight months in the year. The principal rivers of the country are the Derwent, flowing southward into Storm Bay, and the Tamar, northward into Bass Strait. The table-land of the interior is bestrewed with lakes, the largest of which are Great Lake, covering 50,000 acres, and Lake Sorell, 15,000 acres. The climate is delightful and highly salubrious, resembling that of the S. and S.W. of England. The mean annual temperature of the capital is 52°.37, mean summer 63°, and mean winter 42° Fah. The average fall of rain over the island is 21¼ inches. The soil is in most places highly fertile; but being usually covered with dense forests, only a limited portion of the country is yet under cultivation.

Natural Productions.—The mineral treasures of Tasmania comprise gold, iron ore, galena, copper ore, manganese, coal, and salt; but these have hitherto been but little developed. The principal mineral districts are situated in the N.E. of the island. Gold is found in small quantities, and at Fingal, near the E. coast, mining is regularly carried on. Indeed, the mountains of Tasmania may be regarded as forming a continuation of the eastern or auriferous cordillera of the continent. Iron ore of very pure quality, and some of

it highly magnetic, is of general occurrence. Coal of good quality is worked on the east coast, and is known to exist very generally throughout the island; and salt is obtained in the interior. The vegetation strongly resembles that of Victoria, and is characterised by its Eucalypti, acacias, mimosas, pines, and myrtles. The blue gum-tree is often found attaining a height of 350 ft., and 100 ft. round the base. The trees are all evergreen, the timber being highly valuable, and many of them yielding gums and resins. The leading crops are wheat, oats, barley, potatoes, peas, and beans. Fruits of all kinds grow luxuriantly, and the preservation of fruit forms an important branch of industry. Hops and tobacco are also extensively cultivated. The fauna also is almost identical with that of Australia, consisting of kangaroos, wombats, opossums, bandicoots, and ornithorhynchi. The native tiger or hyena-opossum, and *dasyurus* or native "devil," are peculiar to Tasmania, and perhaps also the wild-cat. The birds are numerous, embracing the emu, cockatoo, parrot, eagle, black swan, pelican, duck, &c. There are several varieties of snakes, two of which are venomous; and fish are said to be more numerous than on the coasts of Australia. Black whales abound in all the surrounding seas, spermaceti whales in Bass Strait, and a lucrative whale-fishery is carried on along the southern coast.

Ethnography.—The aborigines, who appear to have belonged to the same race as the natives of the continent (though some regard them as more allied to the natives of New Guinea), have now entirely died out.

The island was first discovered by the Dutch navigator, Tasman, and named by him Van Diemen's Land, in honour of his patron, the then governor of the Dutch possessions in India. In 1798 its insularity was established by Mr Bass, and the strait separating it from the mainland was named after him. In 1803 Lieutenant Bowen was despatched from Sydney with convicts of the most abandoned character to form a penal settlement at Hobart Town. It continued to be a place for transportation of criminals till 1853. Formerly a dependency of New South Wales, it became an independent colony in 1825, with political institutions resembling the Australian colonies. On account of the ill-repute attaching to the original designation, its name was changed, in 1853, to Tasmania. The discovery of gold in Australia has had a most untoward influence on this colony, leading to a great exodus of its population. Sheep-farming is extensively followed, and wool, which commands a high price in the English market, forms the chief export. Its wheat, butter, and cheese are largely exported to the adjacent colonies, Victoria being its best customer. For its Revenue, Expenditure, &c., see table at p. 612.

NEW ZEALAND.

New Zealand, a colonial possession of Great Britain, consisting of a chain of three large and several smaller islands, is situated in the South Pacific Ocean, about 900 m. E. of Tasmania, 1250 S.E. of Victoria, and 6000 m. W. of Patagonia. Lat. 34° 27′—47° 20′ S.; lon. 166° 30′—178° 30′ E.

Wellington, the new capital (lat. 41° 14'), situated near the south extremity of North Island, is on the same parallel as Launceston in Tasmania and the southern part of the Argentine Confederation. The extreme length, extending in a curved line through the centre, measures upwards of 1100 m. The North Island is 550 m. long, with an extreme breadth of 200 m. Middle Island is 580 m. long, and from 150 to 200 m. wide. These two islands are separated from each other by Cook's Strait, 16 m. wide; while Middle Island is separated from Stewart Island by Foveaux Strait, about 10 m. wide. The latter is uninhabited.

Area and Population. — The area of the group is estimated at 106,259 sq. m., or considerably more than the area of Great Britain. Stewart's Island has an area of only 1300 sq. m., while Middle Island is nearly one and a half times the size of North Island. The population, which in 1858 numbered only 117,000, amounted in 1871 to 294,028, of whom 38,000 were aborigines, and the remainder British settlers. The colony has doubled its population during the last ten years.

Political Divisions.—New Zealand is now divided into nine provinces—viz., Auckland, Taranaki, Wellington, and Hawkes Bay, in North Island; and Marlborough, Nelson, Canterbury, Westland, and Otago, Middle Island. In 1870, the province Southland, opposite Stewart Island, was amalgamated afresh with Otago.

WELLINGTON.—Wellington 10 (Port Nicholson), Wanganui 3 (W. coast).

TARANAKI.—Taranaki, or New Plymouth 2 (W. coast).

AUCKLAND.—Auckland 20 (Hauraki Gulf), Onehunga 2 (W. coast).

HAWKES BAY.—Napier 3 (E. coast).

MARLBOROUGH.—Blenheim 1 (Cloudy Bay), Picton 1 (Waitoki Bay).

NELSON.—Nelson 6 (Blind Bay).

CANTERBURY.—Christchurch 12 (Avon), Lyttleton 3 (Port Lyttleton), Timaru 2 (E. coast).

WESTLAND.—Hokitiki 4 (W. coast).

OTAGO.—Dunedin 27, Port Chalmers (Otago Harbour), Oamaru 4 (E. coast), Invercargill 2 (Red River).

Descriptive Notes.—Wellington, on the splendid harbour of Port Nicholson, an inlet of Cook's Strait, has been the cap. of New Zealand since 1870. It was the first and principal settlement of the New Zealand Company, which was established in 1838, and, from its central position, is far better adapted than Auckland for being the seat of government. **Taranaki** was founded in 1840 by emigrants from Devon and Cornwall. **Auckland,** the second town in New Zealand, and till recently the seat of government. It has steam communication with Melbourne, Sydney, the Sandwich Islands, and San Francisco. **Nelson,** on the N. coast of Middle Island, is a thriving town, with some manufactures of cloth and leather. **Christchurch,** a very thriving settlement, established in 1850. It is connected with **Lyttleton,** its seaport, 9 m. distant, by a railway, tunnelled at great expense. **Hokitiki,** cap. of the new province of Westland, for-

merly part of province Canterbury, owes its extraordinary rapid rise to the discovery of very productive gold-fields in its vicinity in 1865. **Dunedin**, the largest city in New Zealand, was founded in 1848 by a body of Scotch emigrants in connection with the Free Church. Its prosperity dates from 1861, when extensive gold-fields were discovered in its neighbourhood. **Invercargill**, formerly the cap. of the small province Southland, is named after Captain Cargill, one of the principal founders of the colony of Otago.

Surface and Climate.—A chain of snow-clad mountains traverses the two larger islands in the direction of their greatest length, throwing off, in North Island, several lateral ranges containing lofty volcanic peaks, amongst which are Mount Egmont (now extinct), 8838 ft., and Tongariro, 6200 ft. The culminating point of the mountain system of New Zealand is Mount Cook, in Middle Island, 13,200 ft. high. The climate is universally described as remarkably salubrious and agreeable, milder and more equable than our own, the winters being warmer, while cool refreshing sea-breezes prevent oppressive heat in summer. Heavy rains and high gales are frequent, but there is no rainy season. Mean annual temperature of Auckland, 60° 3′; mean summer; 68° 7′, and mean winter, 53° 3′. Mean annual temperature at Dunedin, 50°; hottest month, 58°; coldest month, 42°; annual fall of rain, 30 inches; but for Middle Island, in general, the rainfall is 32 inches, and for North Island 50 inches. The range of the thermometer is much less than in England. Snow seldom falls, except in the south, where the elevation of the snow-line is 6000 ft.

Natural Products.—The islands consist, in general, of trap and volcanic formation, but many of the rocks are crystalline, while the sedimentary formations are of shale and grey sandstone. These contain remarkable fossil birds, the most extraordinary of which is the gigantic moa, which must have been from 10 to 15 ft. high. The mineral products are valuable and extensive, and in no respect inferior to those of the other Australian colonies. Gold was discovered in province Otago in 1861, and in 1865 very rich deposits were found at Hokitiki, where mining operations are still carried on on a large scale. Iron-sand abounds in large quantities on the various sea-coasts, and is found to melt into a metal equal to the best Staffordshire iron. Copper exists in several places, but not in sufficient quantities to pay for working. Silver, lead, tin, manganese, alum, and sulphur, occur in particular localities. Coal-seams of considerable thickness and of excellent quality are wrought at Nelson and in province Auckland.

The flora of this country forms a botanical centre called Forster's Region, which forms a connecting-link between the floras of South America, Australia, and Cape Colony. Already 650 species are known to botanists, a very large proportion of which are plants peculiar to this region. The latter include New Zealand flax, from the fibres of which a cordage of singular tenacity and strength is formed. Ferns cover large areas of the country, often attaining enormous dimensions. The tree-fern and Kauri form extensive forests. The Kauri pine is the most

famous of New Zealand trees, but it is confined to the province of Auckland. Its timber is highly prized for building purposes, and is largely exported to the English dockyards for spars to the royal navy. European grains of all kinds, fruits, and vegetables, grow luxuriantly on the cleared surface, and admirable pasture for cattle is produced by sowing the English grasses. When first visited by Europeans, New Zealand was found to contain no indigenous land quadrupeds; but when the first colonists arrived in the country, they found hogs, dogs, and a few rats and mice, probably introduced by runaway convicts from Australia. The geology of the country presents a like absence of the remains of any mammaliferous animal; but a prodigious number of well-preserved fossil birds, of the struthious order, are found in the post-pliocene and pleistocene deposits. The *Dinornis* and *Palapteryx* were of gigantic size, varying in height from 4 to 11 ft. A wingless bird (*Apteryx*), the smallest living representative of the ostrich family, still abounds in these islands, which, however, do not contain many species of the feathered tribe. There are no serpents or other venomous reptiles; but fish swarm on the coasts and in the rivers. Whales and seals, once very abundant, have been greatly reduced in number by the ruthless modes of capture long practised; but the whale-fishery is still carried on with success.

Ethnography.—The aborigines, who are known as **Maories**, belong to the Malayo-Polynesian race, and differ very widely from the natives of the Australian continent.

They are a tall, well-built, active, and intelligent people, with curling glossy black hair and copper complexion. Many of them have been converted to Christianity, and in some districts they have considerable tracts of land under cultivation. They are very courageous in war, and have at different times been very troublesome to the colonists. The race is rapidly on the decline, their number in 1871 not exceeding 37,000, of whom 31,000 inhabited North Island. For many years they have been engaged in an intermittent war with the colonists, and it seems almost impossible for the two races to live peaceably and permanently beside each other. The unscrupulous mode in which their hunting-grounds have been taken possession of by the settlers has given them, unhappily, sufficient cause for the bitter hostility which they have evinced. According to their own tradition, the Maories migrated to New Zealand, about 500 years ago, from a place which they denominate *Hawaiki*. Probably this signifies Hawai, in the Sandwich Islands, as the Maori language is evidently a dialect of the Malayan, and so closely resembling the Hawaian and Tahitian that the natives of New Zealand readily understand the natives of the Sandwich and Society Islands, though these are situated at a vast distance from New Zealand. The emigrants are mostly persons of the middle ranks of life, who, attracted by the climate and fertility of the country, have gone out in companies to lay the foundation of a prosperous nation at the antipodes. New Zealand was discovered by Tasman in 1642, and was visited repeatedly by Captain Cook between 1769 and 1773. After that it became a frequent resort for whalers and others. The first settlement of Europeans took place as early as 1814, but the colonisation of the country did not commence in earnest till 1838, when the New Zealand Company was formed, and commenced operations at Wellington. New Zealand was formed into a colony in 1840. A free constitution, consisting of a House of Representatives and a Legislative Council, came into force in 1853. In regard to religious statistics, the Church of Eng-

land has 71,400 adherents; Scottish Presbyterians, 28,000; the Church of Rome, 15,540; and Wesleyan Methodists, 12,600. Education is well attended to in all the provinces.

Commerce and Industry.—With the exception of gold and gold dust, wool is more largely exported than any other commodity. In 1873, the colony sent to Great Britain wool to the value of £2,445,000, and of gold, £2,492,721. The gum known as "Kauri gum" forms an important article in the exports from Auckland. It is found at a considerable depth beneath the surface, and generally in tertiary strata, associated with coal. Shipbuilding and the trade in timber are, next to mining and wool-growing, the chief departments of the industry of the colony (p. 612).

Auckland Isles.—These consist of a volcanic group of one large and several small islands, about 180 m. S. of New Zealand. The largest island is about 30 m. long and 15 broad, has two good harbours, and is covered with rich vegetation. They were discovered in 1806 by Captain Briscoe, one of the agents of Mr Enderby, to whom the English Government have granted them as a central whaling station. When discovered they were uninhabited, and contained no land animals. Since 1840 they have been occupied by about 70 Maories.

Antipodes Island, about 630 m. S.E. of New Zealand (lat. 49° 32′ S., lon. 178° 42′ E.), is the land in the southern hemisphere most nearly opposite to Great Britain.

Chatham Isles, 380 m. E. of New Zealand, form a small cluster of islands, the two largest of which are named Chatham and Pitt Island. They were discovered by Lieutenant Broughton in 1791, and were inhabited by a harmless race of 1200 savages, who in 1830 were reduced to slavery by a band of New Zealanders, and are now nearly extinct. The products are similar to those of New Zealand, to which they belong.

Norfolk Island, 475 m. N.W. of New Zealand and 1200 E.N.E. of Sydney, is a small but beautiful island belonging to Great Britain. It has an area of 14 sq. m., is well watered and fertile, but has neither harbour nor roadstead. It was originally appropriated for a penal colony of the worst class, but after being cleared of felons it was colonised by the Pitcairn islanders in 1856, and put under the Government of New South Wales. Its *araucaria* are famed for their size and beauty. Pop. 481.

New Caledonia and Loyalty Islands, 600 miles E. of Queensland, form a colonial dependency of France, which, in 1853, took possession of them together with the **Isles of Pines**; area 12,000 sq. m., pop. 44,000. The aborigines are a robust race of Papuan negroes, who speak a language distinct from that of the neighbouring islands. The surface is mountainous, rising in the centre to nearly 8000 ft.; in the north wooded, but elsewhere arid and bare. The productions greatly resemble those of New South Wales.

New Hebrides, a group of about twenty large and a much greater number of smaller islands, N.E. of New Caledonia, from which Espiritu Santo, the largest of them, is about 275 m. distant. The area is estimated at 5720 sq. m., and the pop., who are of the Papuan race, at about 150,000. The group is of volcanic origin, and in Tanna is a volcano of great activity. Most of the islands rise into lofty hills; they are all well wooded, abound with water, and present a most luxuriant vegetation. The chief produc-

tions are figs, nutmegs, oranges, cocoa-nuts, bananas, bread-fruit, cotton, and the sugar-cane. Erromanga, north of Tanna, has acquired a melancholy celebrity as the scene of the murder of the devoted missionary Williams in 1839. Though Christianity has spread widely through his labours, the great bulk of the natives still continue cannibals of the most savage type. In Tanna all the whites were butchered in 1875.

Queen Charlotte Islands, a group of volcanic islands, between the New Hebrides and the Salomon Islands, comprising Santa Cruz, Nitendi, and Manicolo. They are populous and well wooded, the natural productions being similar to those of the New Hebrides. Manicolo was the scene of La Perouse's disastrous shipwreck in 1788.

Salomon Isles.—This archipelago, lying E. of New Guinea, from which it is about 275 m. distant, consists of eight principal with numerous minor islands, and extends from N.W. to S.E. for nearly 600 m. They have not been carefully surveyed, but they are said to be mountainous, fertile, well wooded, and of volcanic origin. The population consists partly of Malays, and partly of Papuan negroes. The largest islands are Bougainville, Choiseuil, Isabel, Malayta, Guadalcanar, and San Christoval.

Louisiade Archipelago, a group of about 80 islands, situated about 60 m. E.S.E. of New Guinea; they are covered with dense forests, and are but thinly inhabited by negroes of the Papuan race. The shores are protected by coral reefs, while the channels between the islands are very deep.

New Britain consists mainly of two large, mountainous, and populous islands, the most westerly of which is about 50 m. E. of the shores of New Guinea. The larger island is supposed to have an area of 11,000 sq. m. In the most northerly is a volcano in active operation. Extensive plains of great fertility stretch along the shores of both islands. The natives are of the Papuan race. They were discovered by Dampier in 1700; cocoa-nuts, sago, bread-fruit trees, yams, and ginger, are among their principal products.

New Ireland, N.E. of New Britain, is about 200 m. long, by 12 broad. It was discovered by Carteret in 1767. The surface is fertile, and the hills covered with forests. The inhabitants resemble the aborigines of Australia, are black and woolly-haired, and extremely savage. The only articles of commercial value which the island produces are fancy wood and tortoise-shell. Area 4360 sq. m.

Admiralty Isles, a group of one large and numerous small islands, 150 m. N. of New Guinea, which they strongly resemble in natural products. The natives are a Malay race, of large stature, well formed, and differing but little from Europeans, except in the colour of their skin, which is black, but not of the deepest shade.

Papua or **New Guinea**, next to Borneo the largest island in the world, is situated N. of Australia, from which it is separated by the Arafura Sea and Torres Strait. It extends from the equator to lat. 11° S., and from lon. 131° to 151° E. This vast island must, on the whole, be regarded as forming a portion of Australasia (as above defined) rather than of Malaysia, notwithstanding that it forms the great easternmost section of that huge archipelago. At the present moment, however, there is probably no country of equal extent on the earth's surface about which so little is known, not excepting the interior of Australia and Africa. It was discovered by Torres, the well-known Portuguese navigator, in 1606,

was visited by Bougainville in 1768, by Captain Edwards of the *Pandora* in 1791, by Captain Belcher in 1840, by Captain Blackwood in the *Fly* in 1845, who surveyed the portion of the island opposite Cape York, and finally by Captain Owen Stanley in the *Rattlesnake* in 1850, who carefully examined the entire S.W. coast. The Dutch established a colony on this coast in 1828, but soon abandoned it, owing to the pestilential character of the climate and the hostility of the natives. In form the island resembles a crocodile, having its back turned towards the equator and its head directed towards Borneo in the Indian Archipelago. Its extreme length is 1500 m.; breadth, 300 m.; supposed area, about 250,500 sq. m.; and the population about 1,000,000. The climate is excessively wet and insalubrious. The interior is very mountainous—several summits in the western portion of the island rising to about 9500 ft.; while in the other extremity Mt. Owen Stanley attains an elevation of upwards of 13,000 ft. The forests, which cover a large portion of the whole area, and line the mountain-sides to a great height, abound in gigantic trees, among which are the camphor-tree and sago palm. Papua is the native region of the true aromatic nutmeg, and other spices are found in the woods. Both yams and cocoa-nuts are plentiful, as also rice, maize, and the sugar-cane. Gold is said to occur in many parts of the island. The only quadrupeds known to exist are dogs, rats, wild hogs, and several species of marsupial animals. There are upwards of 2000 birds, including birds of paradise, of which this is the native region, and a gigantic pigeon, nearly as large as a turkey. The inhabitants, who are of the same race as those of New Caledonia, New Ireland, and the Feejee Islands, are a puny, stunted, negro race, resembling in some respects the negroes of Africa; but the hair, instead of being woolly, like the latter, grows in tufts which stretch out to an enormous length; while, both intellectually and socially, they are immeasurably behind the natives of Africa. They are hideously ugly, with large eyes, turned-up noses, very prominent lips, and a sooty-coloured skin. Their natural deformity is increased by their passing bones and pieces of wood through the cartilage of the nose. The languages spoken in Papua are understood to be very numerous, but so little is known of any of them that no classification is as yet possible; but they are probably more allied to the dialects of Australia and S. India than to the Malay-Polynesian languages of other parts of Oceania (p. 611). The Dutch claim possession of the whole western half of the island, but at present have no settlement on any part of it, except on the shores of **Geelvink Bay**, on the N.W. coast, where they maintain a sickly establishment. This is the only place where the natives come in contact with Europeans, and there is an active and exclusive trade carried on between it and the Moluccas, under the Dutch flag, consisting of birds of paradise, feathers, nutmeg, pearls, gold, fine woods, raisins, bamboos, &c.

Arroo Isles, a group of islands in the Arafuru Sea, south of New Guinea, belonging to the Dutch; they extend from N. to S. about 127 m.: the three largest are named Cobror, Trana, and Vorcay. **Dobbo**, a town on the island Wamma, inhabited by Dutch and Chinese merchants, is at present the greatest mart in the North of Australasia. The products comprise pearl, tortoise-shell, birds of paradise, and trepang or sea-cucumber (an edible animal of the Holothuria family). The inhabitants, 60,000 in number, are a mixture of the Malay and Australasian negro races.

Timorlaut, about midway between the Arroo Isles and Timor, is about 125 m. long by 25 m. broad. The surface is mountainous and wooded, and the coasts are surrounded by reefs and mud-banks.

II. MALAYSIA.

Malaysia, also called the Eastern, Indian, or Asiatic Archipelago, forms the N.W. division of Oceania, and is the largest collection of islands on the globe. It is situated on both sides of the equator, between Further India and China on the one side, and the continent of Australia and New Guinea on the other, having the China Sea and Strait of Malacca on the N.W., the Indian Ocean on the W., the Arafura Sea on the S., separating it from Australia and New Guinea, and the Pacific Ocean on the N.E.

Extending from the Bashee Islands, lat. 21° N., to Sandalwood, 11° S., and from Achin in Sumatra, lon. 95° 25′, to the eastern coast of Ceram, 131° 40′ E., it extends over 22 degrees of latitude and 36 of longitude. The area of the entire archipelago is estimated by the latest authorities at 784,000 sq. m., and the population at nearly 29,000,000, or less than the population of the British Isles, with upwards of six times their area. More than a third of the whole area belongs to Borneo, which is very thinly peopled, and more than a half of the population to Java, the most flourishing island in Malaysia, and regarded by the late learned John Crawford as the centre of its civilisation. Malaysia is subdivided into seven principal groups—1. The Sunda Islands, in the W. and S.; 2. Borneo; 3. The Celebes; 4. The Moluccas or Spice Islands; 5. The Sanguir group; 6. The Sooloo Archipelago; 7. The Philippine Isles. All these groups are more or less of volcanic origin, and exhibit at the present time active volcanoes in numerous localities. "Their entire area is traversed by a part of the great belt of volcanic disturbance which surrounds the Pacific Ocean, and indeed contains the most active and terrible part of this circle. The line of this belt passes from Mt. Erebus in Antarctica, through the North Island of New Zealand and Papua, to meet the circular line of greatest disturbance, a branch of the main belt which winds through the Greater and Lesser Sunda Islands, from Sumatra and Java to the chain of smaller islands east of these, across the Banda Sea to Ceram and Gilolo, and thence with the main belt through the Philippine Isles, round the E. coast of Asia."* The volcanic mountains are mostly of trachyte; but basalt and granite occur in Java, and obsidian in Bali; while chalk and tertiary formations are widely extended. Among the loftiest summits in the archipelago may be mentioned Mt. Ophir in Sumatra, 13,840 ft. above the sea, and probably the loftiest mountain in Malaysia; Mt. Semeroe in Java, 12,235 ft.; and Kini Balu, in Borneo, 13,698 ft. Gold is generally diffused throughout the islands, and several of them contain silver, tin, copper, coal, and iron. The climate, though tropical and moist, is moderated by the surrounding seas. The mean annual temperature at Bencoolen in Sumatra is 82°.5; in Java, 78°; and in the Philippines, 81°. The rainy season varies in different parts of the archipelago, according as they are exposed to the S.E. or the N.E. monsoon. The luxuriant vegetation, combined with the great heat and moisture, render the climate unhealthy to Europeans, especially on the low grounds. The vegetable products are exceedingly varied. The hills are clothed with forests of the most valuable trees, and the plains yield the richest plants and spices in spontaneous abundance. Palms, bamboos, rattans, teak, ebony, sandalwood, and resinous

* Keith Johnston, jun., 'Hand-Book of Physical Geography.

and gum-bearing trees, together with cloves, nutmegs, aromatic trees, pepper, ginger, cotton, tobacco, sugar, sweet potato, and numerous fruits, are very plentiful. The grains cultivated in the larger and more civilised islands are maize, millet, pulses, and rice; but in the others, sago forms the chief food of the inhabitants. The fauna embraces the elephant, hippopotamus, tiger, panther, deer, wild hog, rhinoceros, and many species of the monkey and orang-outang. The ox and buffalo are used for agricultural purposes. Birds of numerous kinds and beautiful plumage fill the woods. Crocodiles are found in the western, and tortoises are numerous in the eastern portion of the archipelago; while fish, trepang, oysters, and other shellfish are common. The aborigines consist of two distinct races of men—the Malays, who form the great bulk of the population, especially in the west; and the Papuan or black race, who are most numerous in the east. The former are characterised by a light-brown or olive complexion, long straight hair, short stature, and robust body, strong and active in their habits, in some localities considerably advanced in civilisation, in others roving pirates. Everywhere migrations are by water. Their boats and canoes are to these islanders what the camel, the horse, and the ox are to the wandering Arab and the Tartar; and the sea is to them what the *steppes* are to the latter. The Malayan language is widespread, extending not only over the Malaysian archipelago, but also throughout New Zealand, Polynesia, and the Malay Peninsula. It is soft and harmonious in pronunciation, simple and easy in its grammatical system, plain and natural in the construction of sentences, and there are few, if any, of its sounds which cannot be readily articulated by Europeans. Though possessing some distinctive characteristics of its own, a considerable portion of its vocabulary is borrowed from the Sanscrit, while it has been to some extent influenced by the Arabic. It possesses a written literature, which, however, is greatly inferior to that of either the Hindoos or Chinese. The Papuans have negro features and curly hair, are generally of small stature and a spare puny form, and are less civilised than the Malays. Mohammedanism is the prevailing religion among the Malay race; the Hindoo faith is professed by a portion of the natives; while Christianity has been introduced into the European settlements. Politically, the archipelago is held by a number of independent native chiefs, and by the Dutch, Portuguese, Spanish, and British.

The Sunda Islands, in the W. and S. of Malaysia, separate the Indian Ocean from the Seas of China and Java, and embrace Sumatra, Java, Bali, Lombok, Sumbawa, Sandalwood, Floris, Solor, Wetter, Timor, and numerous smaller islands on both sides of Sumatra.

Sumatra, the most westerly of the group, and, next to Borneo, the largest island in Malaysia, is situated to the S.W. of the peninsula of Malacca, from which it is separated by the Strait of Malacca. It is divided by the equator into two nearly equal parts. The length is 1025 m., average width 160 m., area 172,250 sq. m. The pop. numbers 2,600,000, who are mostly Malays, the remainder being for the most part of the Papuan negro race. It is traversed in the direction of its greatest length by a chain of lofty mountains which culminates in Mount Ophir under the equator, 13,840 ft. high. The soil is exceedingly fertile, and the minerals comprise gold, tin, copper, iron of superior quality, sulphur, naphtha, and an inferior kind of coal. Much of the island is occupied by

dense forests, which contain an inexhaustible store of timber and fruit-trees. The principal articles of export are pepper, ginger, rice, sago, millet, cocoa-nuts, betel-nuts, gold-dust, sulphur, camphor, and gutta-percha. In the N. there are several petty native states, the chief of which is Achin or Atchin; but the Dutch, who effected a settlement here in 1649, are now the masters of nearly all the territory south of lat. 5° 20′ N., their principal settlements being **Padang** and **Bencoolen**, on the W. coast. In 1874, the portion of the pop. subject to them numbered 1,621,000. The inhabitants, who are considerably advanced in civilisation, manufacture gold and silver filigree work, silk and cotton fabrics, earthenware, arms, and many other articles; while the European colonists successfully cultivate the vine.

Java, the most important and populous island in **Malaysia**, and the chief seat of Dutch power in the East, is situated S.E. of Sumatra, from which it is separated by Sunda Strait. Area, including Madura, 52,000 sq. m.; pop. 17,298,000, of whom about 17,000 are Europeans. It is traversed, in the direction of its greatest length, by a mountain-chain, which has a mean elevation of 1000 ft.; but many volcanic cones rise to 10,000 ft. Volcanoes are, indeed, more numerous in Java than in any other country of equal extent in the world, and volcanic phenomena are often displayed on the grandest and most terrific scale. The climate is characterised by great heat in the plains, and by numerous earthquakes and thunderstorms. The rainy season extends from October till March. Minerals comprise iron, tin, salt, sulphur, and nitre. The range of vegetation is very great, embracing the palms of the tropics and the mosses of the temperate zone. The far-famed upas tree flourishes in the woods, and speedily destroys life if its juices gain access to the animal system, but it neither poisons the air nor injures the surrounding vegetation. This is the only island of the great archipelago of which the teak-tree is a native. Java is the granary of the Asiatic Archipelago, and is supposed to be capable of supporting many times its present amount of population, only about one-third of the surface being under culture. Rice is the principal grain, and is cultivated all along the coast; coffee is the great staple of export; while indigo, tobacco, cotton, cinnamon, ginger, cubebs, maize, pulses, vegetable oils, cocoa, and sago, are other principal products. The fauna resembles that of Sumatra, embracing tigers, tiger-cats, leopards, jackalls, rhinoceroses, buffaloes, crocodiles, and serpents. The Javanese are of the Malay family, and profess Mohammedanism mixed with Buddhism. They possess a national literature, and translations from the Sanscrit and Arabic, and are superior in civilisation to the inhabitants of Malaysia generally. The whole of Java belongs to the Dutch, whose first settlement here was formed in 1575. **Batavia**, on the N.W. coast, is the capital of their possessions, not only in Java, but in the East Indies generally: it is a highly-important commercial town, with 65,000 inhabitants. **Samarang** (50,000), and **Sourabaya** (90,000), both on the N. coast, are fortified seaports, and are highly-flourishing cities. Nearly all the exports of Java consist of vegetable produce, the principal articles being coffee, sugar, indigo, and rice. Almost the whole of the commerce is carried on with the Netherlands, by means of the Dutch East India Company. The total exports, in 1873, amounted to £9,089,900; imports, £6,726,000.

Bali, Lombok, Timor, and the other islands of the Sunda group, stretching in a long chain to the E. of Java, and separated from it and from each other by narrow channels, though containing numerous native states, are

subject to the Dutch, except northern Timor, in which the Portuguese have established settlements. **Delli or Delly, the** Portuguese cap. of Timor, is situated on the N.W. coast; while **Coopang**, on the S. coast, is the principal Dutch settlement. The area of this island is estimated at 11,212 sq. m.; pop. of Portuguese portion, 850,000; do. of Dutch portion, 907,000.

The Borneo Group, comprising the large island of Borneo, in the centre of the Malay Archipelago, with Labuan off the N.W. coast, and Natuna and Anambas between it and the Malay peninsula.

BORNEO, N. of Java and E. of C. Romania, in the Malay peninsula, is the largest island on the globe, having a probable area of 300,000 sq. m., or nearly four times the size of Great Britain; the pop. is estimated at 1,750,000, of whom about 1,235,500 are subject to the Dutch. The E., S., and W. coasts, with the exception of a few spots, remain quite unknown, as also nearly the whole of the interior. It is traversed by two ranges of mountains, which have a general direction of S.W. and N.E. The loftiest of these, being that nearest the Asiatic continent, attains its highest elevation in Kini Balu, 13,698 ft. above the sea. Borneo is noted for the abundance of its valuable minerals, especially for its diamond mines near Pontianak. Excellent coal, said to be superior to that of Newcastle, is wrought in Borneo Proper, Banjarmassin, and Sarawak. Valuable mines of antimony occur in the province Sarawak; while iron, tin, copper, and platina are found in numerous localities. The flora and fauna are of the most varied and gorgeous description. The forests furnish valuable timber and the gutta-percha tree. The principal cultivated plants are sago (here the chief food of the natives), maize, rice, cocoa-nut, and the plant from which the resinous gum benzoin is produced. The orang-outang is peculiar to this island and Sumatra. Another peculiar animal is the *potamophilus barbatus*, a carnivorous mammal resembling at once the otter and ornithorhynchus. The inhabitants belong to four races—the aborigines, Malays, Chinese, and Europeans. The aborigines, who are named Dyaks, considerably resemble the natives of the Celebes and of the Australian continent, while their dialects form a link in the great chain of Malayo-Polynesian languages. The Malays have established themselves in great numbers on the coasts and navigable rivers, where they occupy themselves in commercial, but frequently also in piratical, pursuits. The Chinese are very industrious, and conduct exclusively the mining business of the country; while the Europeans are for the most part Dutch and English traders. About two-thirds of the island, comprising the entire centre and south, are tributary to the Dutch, who have here two settlements, **Banjarmassin** and **Pontianak**. The province of **Sarawak** was purchased from the native chiefs by Sir James Brooke, in 1842, who, with his heirs, bear the title of Rajahs of Sarawak. **Borneo** or **Bruni**, formerly the metropolis of a large independent kingdom, contains a pop. of about 22,000. It was taken by the British in 1846, and the small island, **Labuan**, 30 m. farther N., a few months afterwards. The latter contains a colony at **Victoria**, has a harbour, and extensive mines of excellent coal.

The Celebes Group, including the large island Celebes, together with Bouton, Xulla, &c., is situated E. of Borneo, from which it is separated by the Strait of Macassar.

CELEBES, the only really important island of the group, has an area of about 73,000 sq. m., and a pop. of about 2,500,000. The shape is extremely irregular, the island being broken up into a series of peninsulas.

The surface is greatly diversified, and in the sublimity of its scenery is said to surpass any other island in Malaysia. The climate is healthy and agreeable, though hot in the low grounds. Minerals comprise diamonds, gold, copper, iron, salt, and sulphur. The forests, though not extensive, contain a great variety of trees, from one of which the well-known Macassar-oil is extracted. The *anoa*, a fierce kind of antelope about the size of a sheep, is peculiar to this group. The trepang-fishing and the catching of turtle occupy thousands of the natives, who consist of several races—viz., the Horaforas, in the centre; the Bugis, on the coasts, a maritime commercial people more resembling the Polynesians than the Malays; and the Badjus, or sea-gipsies, who constantly reside in their ships, and carry on extensive commerce with China, to which they export cotton, edible birds' nests, tortoise-shell, and pearls. Celebes was discovered by the Portuguese in 1512; but in 1660 they were expelled by the Dutch, who continue to control the island. Their principal establishments are **Menado**, in the N.E., and **Macassar**, near the S.W. extremity. Area of Dutch portion 45,000 sq. m., pop. 356,000.

The Moluccas or Spice Islands, comprising Bouro, Amboyna, Ceram, Banda, Gilolo, &c., form a widely-scattered group, lying between Celebes and New Guinea. Area, 43,000 sq. m.; pop. 376,000.

The Moluccas are mountainous, volcanic, subject to earthquakes, and very fertile, producing nutmegs, cloves, and other spices, fine woods, and a great variety of fruits. On the coast are numerous pearl and trepang fisheries. These islands are, for the most part, subject to the Dutch, whose chief seat of power is at **Amboyna**, which, next to Batavia, is the principal station of Dutch commerce in Oceania. The people consist of Malays, Papuans, Chinese, Japanese, and some Europeans.

The Sanguir or Sangir Group, consisting of an archipelago of 46 small islets, is situated in the Celebes Sea, north-west of Gilolo. Pop. 12,000.

The Sooloo Archipelago, in the Celebes Sea, between Borneo and the Philippine Isles, consists of a group of above 60 islands, the principal of which is Cagayan, in the centre; area, 450 sq. m.; pop. 200,000.

The Philippine Isles, an extensive archipelago in the north-east of Malaysia, separated from Further India by the China Sea, and from Borneo and Celebes by the Celebes Sea. Lat. 5° 32′—19° 38 N.; lon. 117°—126° E.

The group consists of about 1200 islands, of which Luzon, Mindanao, Palawan, and Mindoro, are the largest. The area and population are variously estimated; but probably the former is about 114,000 sq. m., and the latter about 6,000,000. The area of the Spanish portion amounts to 52,148 sq. m., and the pop. to 4,320,000. The islands are of volcanic formation, and numerous active volcanoes exist in the mountainous regions. Being situated within the range of the monsoons, the climate is moist, and hurricanes are frequent. The high temperature and abundant moisture produce a luxuriant vegetation, the character of which is not very different from that of Malaysia generally. The tobacco raised here is of the finest description, and the cigars of Manilla have obtained a wide celebrity, while sugar and rice are extensively exported. The mineral products are abundant, comprising coal, sulphur, alum, mag-

nesia, and marble; and the fauna, which in general resembles that of the other islands of Malaysia, embraces foxes, gazelles, monkeys, and crocodiles. The aborigines are of diverse origin, but are, for the most part, Malays and Oceanic Negroes. The Tagala and eleven other dialects are spoken, while the religion is partly Mohammedan and partly Christian. Next to Cuba, the Philippines form the most valuable of the Spanish foreign possessions. They were discovered by the illustrious Portuguese navigator Magellan, sailing under the flag of Spain, in 1521, in the course of the first circumnavigation of the globe. It was *the search for spices* that led to this discovery, as well as to the more splendid achievements of Columbus and de Gama; and yet, fortunately for themselves, they produce *no* spices. The first land that Magellan made, after quitting the western shores of America, was the port of **Batuan**, in the island Mindanao. From this he sailed to Zebu, where he planted the cross, sprinkled a little water on its king, and thus imagined himself as having established the Christian religion. Having accepted a challenge from the petty prince of Mactan, Magellan, with fifty other Spaniards, entered the lists with a host of the natives, when, being decoyed into a marsh, the great navigator, with six of his companions, lost their lives. The rest escaped, and, sailing in a S.E. direction, discovered the Moluccas.* **Manilla**, on the south-west coast of Luzon, is the capital of the Spanish possessions in the East. Its population amounts to 15,000, and its commerce with India, China, America, Spain, and Great Britain, is extensive.

III. MICRONESIA.

Micronesia, formerly reckoned a part of Polynesia, comprises the N.E. section of Oceania, consisting of the numerous groups of small islands which stud the North Pacific Ocean from the equator to lat. 28° N., and from the Philippine Isles on the west to the Sandwich Isles on the east. Area, 10,000 sq. m.; pop. 250,000.

Except Hawaii, in the Sandwich group, they are of very small dimensions, of moderate elevation, and either of coralline construction or surrounded by coral reefs. The climate is salubrious and agreeable, being tempered by cool breezes from the ocean, while the vegetation is gorgeous in the extreme. The natural productions comprise the bread-fruit tree, cocoa-nut palm, banana, plantain, sugar-cane, taro-root, and numerous other edible roots and fruits. When first visited by Europeans, these islands, in common with those of Polynesia Proper, contained no quadrupeds except hogs, dogs, and rats; but the sea teems with fish, which, in some of the groups, constitute the main food of the people. The inhabitants belong almost exclusively to the Malay race, are of a dark-brown colour, use little clothing, practise tatooing, and are averse to regular industry. Their religion was formerly Polytheism, embracing a belief in a future state; and their priests, who also acted as physicians, possessed an immense influence among them, as is evidenced by the singular institution of "Taboo." Whenever a priest chose to utter this word over any object, the owner was obliged to renounce all further claim to it; if his house, for instance, was *tabooed*, he durst not again enter it. The numerous languages spoken in all the islands of Polynesia and Micronesia are dialects of the Malayan. Till European missionaries introduced

* Crawford's 'History of the Indian Archipelago,' vol. ii. p. 449.

the Gospel the grossest barbarism, licentiousness, infanticide, and cannibalism prevailed throughout all Micronesia and the South Sea Islands; but now myriads of the inhabitants are found "sitting at the feet of Jesus, clothed, and in their right mind."

Divisions.—Micronesia embraces the following principal groups:—The Bonin Islands, S.E. of Japan; Ladrone or Marianne Islands, E. of the Philippines; Caroline and Pelew Islands, N.E. of Papua; the Marshall or Mulgrave Archipelago, E. of the Caroline Group; and the Sandwich Islands.

The Bonin Isles, in the N.W. of Micronesia, and about 500 m. S.W. of Yeddo, in Japan, consist of a group of 89 small islands, the largest of which are Peal and Kater Islands, at the former of which English and other Europeans, engaged in the whale-fishery, are settled. The northern islands are inhabited by a Japanese colony.

The Ladrone or Marianne Isles, a group of 17 large and numerous small islands belonging to Spain, are situated about 1400 m. east of the Philippines. Only 5 of them are inhabited, which contain a pop. of about 5600. They are of volcanic origin; their general aspect is beautiful and picturesque, the soil very fertile, and the productions are cotton, indigo, rice, sugar, and the plantain. The inhabitants are mostly of Spanish descent, the native races having almost disappeared. The largest island, named Guahan, is forty leagues in circuit, and contains the town **Agagna,** which is the cap., with a pop. of 3000. They were discovered by Magalhaens in 1521, and called by him **Ladrones,** signifying *robbers*, owing to the thievish propensities of the inhabitants.

The Caroline and Pelew Islands, also termed the New Philippines, commence with the Pelew Islands, 550 m. east of Mindanao in the Philippines, and extend eastward over a space of about 2000 m. They were discovered by the Spaniards in 1543, and named in honour of Charles II. of Spain. The Carolines contain several small groups, as the Pelew, Yap, Mortlock, and Duperry Isles. They are all of coralline formation, except the Yap group, which is mountainous, and abounds in the precious metals. The climate is mild and agreeable, while the productions resemble those of Micronesia generally. The pop., 29,000, are chiefly Malays, skilful navigators, and subsist chiefly on fish and cocoa-nuts. They belong nominally to Spain, but contain no Spanish settlement.

The Marshall or Mulgrave Archipelago, considerably to the E. of the Caroline group, consists of several distinct groups of low coral islets, about midway between Papua and the Sandwich Islands. The principal clusters are named the Gilbert Islands, Radack Island, Ralick Island, Piscadoras, Mulgrave Island, and the Marshall Islands. The climate, productions, and inhabitants, do not differ from the rest of Micronesia. The Gilbert Islands contain about 60,000 inhabitants.

Sandwich Islands, the most important group between Malaysia and the American continent, are situated about 3000 m. W. of Mexico, and about the same distance N.E. of Papua. The islands are fifteen in number, but only eight are inhabited, the chief of which are Hawaii or Owyhee, Maui, Oahu, and Kauai. The area is estimated at 7630 sq. m., and the population, 69,800. When Captain Cook discovered the islands, in 1778, he estimated the population at 400,000. The Sandwich Islands are all high, steep, mountainous, and of volcanic formation. Hawaii, the

largest of the group, contains two stupendous summits—viz., Mowna Kea, 13,951 ft., and Mowna Loa, 13,758 ft. The former is the loftiest summit in Oceania, and the latter the highest active volcano. The climate is mild and salubrious; mean temperature, 75° Fah. The range of the thermometer is very small, the rains are moderate, and in general the country is one of the healthiest on the globe. Gold has been discovered in Hawaii, and salt in Oahu. Wheat is raised in the uplands; and in the valleys, coffee, sugar, cotton, taro-root, arrowroot, cocoa, bread-fruit, and various European and West Indian fruits. The natives, who belong to the light-coloured Malay stock, are a mild, docile, improvable race, who have very readily adopted the manners and customs of civilised life. Their language very closely resembles those of Tahiti and New Zealand; it was first reduced to a written form by the American missionaries, and contains only twelve letters—viz., five vowels and seven consonants. In 1819 the king publicly abolished idolatry, and embraced the Christian faith. Since then the Scriptures have been printed in the native tongue, churches and schools have been built, and constitutional government established. The islands are well situated for trade, being in the route between America and China, and constant communication is maintained with San Francisco and New Zealand. A treaty of friendship, commerce, and navigation between her Majesty the Queen of Great Britain and the King of the Sandwich Islands was signed at Honolulu in 1861. **Honolulu**, in the island Oahu, is the capital and principal port; population, 14,000. Many citizens of the United States reside in these islands, which are greatly under American influence.

IV. POLYNESIA, OR SOUTH SEA ISLANDS.

Polynesia forms the S.E. part of Oceania, embracing the numerous archipelagos and islands south of the equator, and lying between Australasia and the 110th degree of W. longitude. Area estimated at 12,000 sq. m.; population, 300,000.

For an account of its general features, natural productions, race of people, religion, and languages, see under "Micronesia," the characteristics of which are almost identical with those of Polynesia.

DIVISIONS—Beginning at the W. extremity, the following are the principal groups:—the Feejee Islands; Samoa or Navigators Islands; Tonga or Friendly Islands; Hervey or Cook's Islands; Society Islands; Austral Islands; Low Archipelago; the Marquesas; and Easter Island.

Feejee or Viti Islands.—A group of about 200 small islands, 1900 m. N.E. of Sydney. The area is estimated at 8034 sq. m., and the population at 143,000. Some of the islands are mountainous, and all of them are supposed to be of volcanic origin. The natives are Papuans, a race which does not extend farther east, and hence the islands might with greater propriety be classed under Melanesia. Many of the natives have been converted to Christianity through the labours of Wesleyan missionaries, but the remainder practise cannibalism and human sacrifices. They were annexed to the British Crown in October 1874. The climate is tropical and moist. They produce sandalwood, together with fruits of various kinds, cocoa-nut oil, and arrowroot; while the sugar-cane, cotton,

and tobacco have been introduced with advantage by English and American settlers.

Samoa, or Navigators Islands, are situated about 450 m. N.E. of the Feejee group: area estimated at 1162 sq. m.; population, 35,000. They are mountainous and of volcanic formation, but surrounded by coral reefs. The soil is rich, the surface densely wooded, and the productions similar to those of the neighbouring groups. The inhabitants are Malays, and were very ferocious till Williams, the missionary, visited them in 1830, when many of them embraced Christianity. They are now fast advancing in civilisation.

Tonga, or Friendly Isles, S.E. of the Feejee Isles, consist of three clusters, of which the Tongataboo group is the largest; area, 190 sq. m., pop. 25,000. They were discovered by Tasman in 1643, but received their collective name from Cook, on account of the hospitality shown him by the natives, who, however, are now known to be deceitful and treacherous. The first missionaries sent here were massacred, but of late years others have met with considerable success. Cocoa-nut oil is almost the only important export.

Hervey or Cook Islands, E. of the Friendly Islands, embrace the scattered islands of Rarotonga, Atiu, Mangeia, and several others, nearly all of them lofty and volcanic. They were discovered by Cook in 1773; but Rarotonga was first made known by the missionary Williams, who laboured here with singular success. The population, who are estimated at 10,000, are of the Malay race.

Society Islands, N.E. of the Hervey group, consist of about 10 conspicuous isles, all of them lofty, volcanic, fertile, and surrounded by coral reefs, against which the vast waves of the Pacific break with terrific grandeur. Area, 705 sq. m.; pop., 14,000. Tahiti, the "gem of the Pacific," is extremely beautiful, contains mountains 7000 ft. high, and clothed to the summits with a rich and luxuriant vegetation. The exports consist of pearls, pearl shell, cocoa-nut oil, sugar, and arrowroot. Tahiti was forcibly taken possession of by the French in 1843, who now claim a protectorate over this group, together with the Gambier and Wallis Islands. They were discovered by Quiros in 1606, but received their name from Cook, in honour of the Royal Society, by whom he was sent out in 1769 to observe the transit of Venus. It was to the Society Islands that the first messengers of the Gospel to Polynesia were sent, and from their shores numerous missionaries have sailed to the neighbouring archipelagos.

The Austral Isles, so called from their position S. of Tahiti, are lofty, fertile, and beautiful, and contain about 1000 inhabitants, who closely resemble those of the Society Isles.

The Touamotou or Low Archipelago, E. of the Society group, consists of a number of coral islands, slightly raised above the surface of the ocean, rendering the navigation intricate and perilous. The Gambier Islands, however, in the S. of the Archipelago, and Pitcairn Island, further eastward, are high and volcanic. Very few of them are inhabited, the population of the whole probably not exceeding 10,000. The entire group is now a French possession. Pitcairn Isle is of interest as the refuge of the mutineers of the Bounty in 1789.

The Marquesas lie 900 m. N.E. of Tahiti, and 2000 m. S.E. of Hawaii. Area, 746 sq. m.; pop. 4200. They are of volcanic formation, with mountains rising to a height of 5000 ft.; while the interior is fertile, pro-

ducing yams, pulse, cocoa-nuts, sugar-cane, and wild cotton. The inhabitants are Malays, and are the least civilised of all the natives of Polynesia. They carry on war with the most savage ferocity, and practise cannibalism. The French, since 1842, have occupied the two largest islands, and claim the whole group as a colonial territory.

Easter Island, the most eastern of all the countless islands of the Pacific, is situated in lat. 27° S., and lon. 110° W., far to the S.E. of the Gambier Archipelago, and upwards of 2000 m. W. of the coast of South America. Though only 12 m. long and 4 broad, this island has of late excited much interest among geographers, on account of the numerous relics of a former civilisation found on it, consisting of huge sculptured stones bearing inscriptions now unintelligible, and well-executed statues of immense size, immeasurably beyond the artistic skill of the existing natives, who do not differ from the generality of eastern Polynesians. Similar traces of a superior race are found in other islands farther west, and not remotely resembling the works of art found in Mexico and Peru, especially on the islands of Lake Titicaca. Is it possible that Manco Capac and his fellows crossed the Pacific through the islands of Polynesia, Easter Island being the last stepping-stone across the boundless world of waters? The natives of Easter Island have a tradition that their fathers, many hundred years ago, arrived here from Oparo in the Gambier archipelago, 1900 m. distant; and though their present language bears no resemblance to that of the ancient Peruvians, but is closely allied to that of New Zealand and the Sandwich Isles, we know that nations sometimes change their language, and we understand that the word "Titicaca" itself is pure Malayo-Polynesian.

ANTARCTICA.

SUCH is the name given to those extensive tracts of land, recently discovered within the Antarctic Circle, by British, French, and American navigators, and supposed to form portions of a great continent round the South Pole. As the leading features of this inhospitable region have been described in our remarks on the "Antarctic Ocean" (p. 26), we here merely remark, that should the explored tracts be found to be continuous, and the existence of a Southern Continent put beyond doubt, we shall then have seven continents—viz., Europe, Asia, Africa, North America, South America, Australia, and Antarctica; and seven corresponding oceans—viz., the Arctic, North Atlantic, South Atlantic, Indian, North Pacific, South Pacific, and Antarctic Oceans. If the world we inhabit was indeed created and moulded by the divine hand, this remarkable fact is precisely what we might have expected. Seven is everywhere the number denoting *perfection*. It is God's signature, stamped on the works of His hands, signifying that the work is His, and that man must neither add nor diminish. Scripture is full of it in its every section, and Nature evinces innumerable traces of it. Thus we have seven days' work of creation, seven days in the week, seven colours in the sunbeam, seven notes in the diatonic scale, seven petitions in the one perfect prayer, and all founded on the seven attributes of the Eternal!

INDEX.

ABBREVIATIONS.

Archᵃ. Archipelago; *B.* Bay; *C.* Cape; *Ch.* Channel; *Est.* Estuary; *Fr.* Frith; *Ft.* Fort; *G.* Gulf; *Gl.* Glacier; *Gt.* Great; *Hd.* Head; *Hr.* Harbour; *I.* Island; *Is.* Islands; *Isth.* Isthmus; *L.* Lake or Loch; *Lr.* Lower; *M.* Mountain; *Mts.* Mountains; *Pen.* Peninsula; *Pt.* Point; *R.* River; *Sd.* Sound; *Str.* Strait; *Up.* Upper; *S.* South; *E.* East; *N.* North; *W.* West.

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